EASST 2022

Politics of technoscientific futures

Madrid July 6 - 9

Book of Abstracts

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WELCOME TO EASST 2022 MADRID

Dear participants and members of the STS community,

We can finally meet again face to face, after four years since we last had this opportunity in Lancaster. We wholeheartedly hope that this will be a great moment in which we can talk to each other, share ideas, dreams, concerns, support, and, why not, joyful moments of much missed conviviality. Almost 1000 of us will be gathering in Madrid, and this is a historic figure, which reveals how important it is to meet again after these troubled years.

EASST 2022 has a very exciting and inspiring program, with two amazing plenaries and four timely and inspiring sub-plenaries to look forward to. And, on top of that, there are more than 800 absolutely thrilling papers you will be presenting.

However, the road to EASST 2022 has not been an easy one. The pandemic restrictions in place when the conference began to be organized, have made it impossible for us to choose a university, the traditional venue in our past EASST conferences. For the first time, we had to choose a venue that would guarantee the viability of a conference for a minimum of 800 people, even in the event of restrictions. While this choice would fully guarantee the celebration of the conference, it came at a cost, which could not but be reflected not only in the increase in the registration fees but also in the higher costs of lunch boxes. Aware of this situation, we have done our best to negotiate the lowest possible prices.

Yet, we are aware that the massive conference model that we have adopted these past decades also has its limits, and raises legitimate doubts and controversies. As a result, we will provide during the conference an opportunity for a broader debate on our current model of conference meetings and potential alternatives, as we also believe that such debate is necessary.

We are especially grateful for your support, for registering for the conference and organizing your journey to come, from all corners of Europe and the rest of the world. Looking forward to have an amazing time here in Madrid!

The local committee

EASST 2022

CONFERENCE THEME

Politics of Technoscientific Futures

Recent years have been marked by uncertainty and instability, as the pandemic continues to disrupt lives and communities, transactions and supply chains, customs and rituals. Possible pathways to what we once called the future seem to open and close rapidly from one moment to the next. Constellations of rights and responsibilities – and sites of jurisdiction for defining them – shift daily in relation to new knowledge claims and accompanying uncertainties. Calls to seize the opportunity presented by this crisis abound across projects of techno-political transformation: *Can we maintain the dramatic reduction of CO2 emissions that we witnessed during the height of the pandemic? Can scientists harness public optimism from vaccine breakthroughs and help quickly implement projects of bioeconomic transformation? Will this new perspective legitimate funding and creation of more public goods such as enlarged public green spaces and cycling infrastructures? Will governments and the private sector seize the opportunity to collaborate in creating new biopolitical regimes of data collection, knowledge, and control?*

The current pandemic is only one in a series of destabilizing events that have jarringly transformed the world across so many dimensions. A little more than a decade ago, recession propagated across the world, spreading from the US to Europe and beyond, as the Euro faltered while nations succumbed to debt crisis. People lost homes, lost livelihoods, lost trust in governments and questioned their own presumed sources of stability. More recently, the record-setting heat waves of summer 2021, in Canada first and in Southern Europe afterwards, along with unprecedented floods in Northwestern Europe, have come as emphatic warnings of what the most recent IPCC report has dramatically spelled out: we are already well beyond the point of no-return in the climate crisis.

In such moments, the modes by which human interconnectedness are constructed are made visible as sociotechnical systems at risk. Many argue that these events demand drastic changes in social, economic, and political orders. Defining the shape of those changes and spurring progress toward them proves elusive. Even as the central organizing principles of human cohabitation and governance are fundamentally challenged, many patterns of thought, of vision, of knowledge about the world and intervention in it maintain striking forms of continuity.

Such existential crises bring the contingent politics of the future to center-stage. The forms of knowledge and expertise that have played powerful roles in governing human societies are again in question, and the ostensibly laudable progression of technological innovation has become subject to broader critical inquiry, revealed as complex, controversially

constructed sociotechnical scaffolding. The political dimensions of technoscience have temporarily been made widely visible and compelling.

Today, at the threshold of an unknown post-pandemic scenario, at the very moment in which new paths are being conceived, opened and resisted, there is an urgent need to produce knowledge about those whose visions of a better future dominate public narratives. At stake are the forms of social order that will become once again naturalized, what questions get asked, and what forms of silence and silencing are legitimated. Observing our worlds as constructed by a multitude of different agencies, by collectively shared imaginations as well as by institutionalized forms of order and reason, spotlights our own roles as knowledge producers, performers of unseen scripts, and agents of change. If we indeed contribute to shaping the very dynamics we engage in our studies, then an ambitious, outward facing yet reflexive, critical and constructive STS agenda is our responsibility, both in the sense of response-ability and of becoming-with.

Critical examination of the dynamics by which knowledge and social orders are co-produced make visible the normative agendas and corresponding rationalities that are mobilized to govern in times of collective crisis. Elucidation of the interactions and transactions envisioned to be systemic necessities, and the imaginaries that mobilize capital and collective action must be put in conversation with alternative knowledges and visions, emerging modes of resistance and unseen strategies of world-making at the margins. We call for the examination and multiplication of possible futures of all kinds, for the study of sites of epistemic and political prescriptions for action, as well as mechanisms by which alternatives are made invisible or undesirable.

A closer study of the dynamics by which the past and the present are known and correspondingly acted on and redescribed in the name of better futures, is an urgent task for an STS community that embraces its potential to transform the world as it studies it. We would like to seize the opportunity of EASST 2022 to address this call, inviting scholars from our community to rise to the occasion of collective destabilization to engage critically and creatively with the technoscientific politics of futures.

Local and scientific committees of EASST 2022 MADRID

Local Committee

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PLENARIES

Plenary 1

REVISITING "EUROPE'S REFUGEE CRISIS" IN TIMES OF WARS AND PANDEMICS: IF WE AIM FOR A COLLECTIVE OPPORTUNITY OF FUTURE, WHAT KIND OF STS DO WE NEED?

Date: Wednesday July 6th, 2022

Time: 17:30 – 19:00

Location: Auditorio Norte – Pabellón Norte (IFEMA)

Crisis has become a common term in recent years. We moved from Global Economic Crisis through Debt crisis in Southern Europe, the Mediterranean Refugee Crisis, to Climate crisis and a Global Pandemic. Different situations that have gained relevance in broadcasting headlines and accumulated hashtags in social media worldwide. Currently the Russian invasion of Ukraine has brought war to 'post-war Europe' -so headlines tell us- and the welcoming reception of refugees at the Eastern EU borders have been overwhelming, by both governments and citizens alike. However, the EU borders have not always been so receptive. Poland's border with Belarus became a hot spot in the harshest of winter this very year. Borders were reinforced and Poland army mobilized to prevent refugees entering the EU. As terms like "threat", "avalanche", or even "invasion" began to circulate, social opinion was not always open to gestures such as, "reception" and "welcoming". While in Southern Europe and the Mediterranean the surveillance of Europe's southern borders have been constantly intensified, the work of Frontex extended and the death rate of migrants alarmingly high, this political situation seldom makes the news. In the meanwhile, migration routes have shifted from the Greek islands to Italy and Malta or Spain, not only at the crossing of the Strait of Gibraltar but also in the Atlantic Canary Route from West Africa.

Securitization measures, borders controls, articulations of belonging and exclusion, as well as racist stereotypes are uncannily fueling extreme right-wing discourses throughout Europe. Discourses mobilized and materially enacted in dense displays along with histories of colonization, global extractivist practices, technological, often militarized, modes of surveillance, digital processes for recognition, biometric technologies, and geopolitical categorizations of alterity. All these processes are articulated in an intricate choreography of lives and deaths, of bodies attempting to navigate seas as much as bureaucratic procedures, of recognition patterns, legal requirement and interoperability protocols. A whole set of heterogeneous —somehow independent yet juxtaposed— material-semiotic apparatuses that limit transits composing (sometimes actual) barriers—to try to stop or to control human transits with increasing risk to their lives.

STS has a long tradition of unsettling given truths and unraveling black-boxes by caring about "neglected things" assembled in heterogeneous material-semiotic compounds (Puig de la Bellacasa, 2010). Specially, feminist and antiracist STS along with feminist points of view on epistemologies, have provided unique insights to help disentangling the how of long-term patterns of inequality and to bring to the fore how they are actually produced. This work has attended to inequalities in tangible heterogeneous material interactions that shape bodies and objects alike, situating these in recurrently enacted robust interconnections. If, as the saying goes "the Devil is in the details" then, more often than not, attention to those details may allow us for new perspectives, undoing what seems to be made of concrete.

Drawing from this fruitful STS tradition, in this first plenary session we will like to "stay with the trouble" (Haraway, 2016) and address the topic of the conference in a dialogical setting, where Amade M'charek and Annalisa Pelizza will engage in a conversation about the transits of people and bodies at European borders. In these never-ending narrations of "crisis", "refugees" and "migrants", such terms become categories of conflict with performative effects. If as Latour stated years ago, "science is politics by other means" (1988) our analyses are political and we share a profound respons-ability to the regimes of life and death currently articulated in this Antropocene pandemic scenario (Haraway, 2016). What will be our responses? How will we engage with such urgent political demands? How can we turn our analyses into fruitful tools to disentangle inequalities and to denounce global bioregimes based in colonial exploitation? And, perhaps most importantly, if we aim for a collective opportunity of future, what kind of STS do we need?

Chair

Carmen Romero Bachiller is Ph.D. in Sociology at Complutense University of Madrid where she works as Associate Professor in Sociology. Her research interests focus on bodies and practices as products of material relationality, addressing vulnerabilities, privileges, and power relations. She has worked on migrant women and gender reconfigurations in transnational migrations. Currently she works in the analysis of processes of health/illness/care in the post pandemic situation considering dynamics of resistance and violence entangled in caring processes from a feminist STS intersectional perspective. Her latest publication in STS is: "The cryopolitics of human milk. Thermal assemblages of breast milk in donation, banking, and bio industrial research", *Science, Technology & Human Values* (2022).

Participants

Annalisa Pelizza

Scripts of Alterity and the co-production of knowledge and order at the European border

As the 2022 EASST conference's theme goes, 'critical examination of the dynamics by which knowledge and social orders are co-produced makes visible the normative agendas and corresponding rationalities that are mobilized to govern in times of collective crisis.'

This citation raises two important insights. First, it recalls that knowledge and social orders are co-produced – a well-known tenet in STS which is always worth recalling. Second, it stresses that the critical analysis of such co-production makes visible normative agendas and rationalities.

In my lecture, I would like to test these two insights against my most recent research about the production of knowledge about people on the move at, across and despite European borders. First, I wonder which European orders are produced together with the creation and circulation of knowledge about so-called "Third Country Nationals." I will argue that we are witnessing the return of overlapping jurisdictions, to some extent (but not completely) similar to those common in pre-modern times. Second, I will propose the notion of "Scripts of Alterity" to conceptualize the exercise of critical examination that reveals normative agendas and rationalities.

The answer to this question opens two analytical possibilities. The first concerns the enactment of security subjects as proper users endowed with potentialities to action vis-à-vis apparatuses. The second allows accounting for resistance not in a vacuum, but as disinscriptions from the possibilities and limitations of the scripts of alterity. Drawing on data collected at the European border, the lectures will eventually try to contribute to the debate about how to account for conflict while adopting a sociotechnical perspective.

Annalisa Pelizza is STS professor at the University of Bologna, and visiting professor at the STePS department, University of Twente. Since 2022 she is vice president of STS Italia. Her research on "governance by data infrastructures" studies how data systems and practices can entail long-term but unnoticed transformations in modern institutions, which are often buried in technical minutiae. She has been the recipient of several European Commission grants and currently leads the "Processing Citizenship" program, funded by the European Research Council.

Amade M'Charek

Vital Elements and Postcolonial flows: Attending to migrant death and the possibility of life.

Since 2014 more than 23.000 people have drowned in the Mediterranean Sea. They have been attended to as "border death" (Last & Spijkerboer 2014), crucially, drawing attention to the militarization of Europe's borders and its migration policy. But what if we would make a decolonial move and cross the Mediterranean, from Europe to Africa? What if we would attend to death, not in relation to borders that kill, but in relation to life and livelihood?

The starting point for this talk is the beaches of Zarzis, a southern Tunisian harbour town, where dead bodies have been washing ashore since the mid-nineties. I ask "how did these bodies end up here?" A forensic question that I will not engage in any self-evident way. I reconfigure forensics, from an art of finding evince and closure, to an art of paying attention. A mode of opening up and articulating complex entanglements.

Inspired by forensics, its attention to materialities and temporalities as well as its tenet of following heterogeneous traces, I query the relation between death and the possibilities for life and livelihood by trailing vital elements and the relation between them. Vital elements, I suggest, are materialities that are crucial for fostering live or causing death in their absence. Think of phosphorus, salt, water, or, sea sponges. Moving with and being moved by these materialities and the way they have been part of extractivist practices, I will demonstrate how they help us to see the durability of unequal, (post)colonial relation, underscoring what can flow easily and what is being stopped between Europe and Africa. But these materialities also alert us to the fact that rather than "Europe's migration crisis" what we are witnessing is a chronic situation of producing life and death.

Amade M'charek is Professor of Anthropology of Science at the Department of Anthropology, University of Amsterdam, where she acts as the director of the research group Health, Care and the Body. M'charek is PI of the RaceFaceID project, an ERC-consolidator project on forensic identification and the making of face and race, and co-PI of the NWA project Pressing Matter: Ownership, Value and the Question of Colonial Heritage in Museums. Her work has centred on the ir/relevance of race in science and society focusing on genetics and forensic practice, exploring issues of post coloniality, temporality and identity. In her research on migrant death, she has developed an interest in forensic methods for studying (post)colonial relations, circulations and extractions. She was recently awarded an ERC-advanced grant to develop this line of research in her project Vital Elements.

Plenary 2

THE FUTURES AND POLITICS OF STS IN EUROPE

Date: Friday July 8, 2022

Time: 15:45 – 17:15

Location: Auditorio Norte – Pabellón Norte (IFEMA)

This plenary is intended to support collective sensemaking about the identity and future of the field of STS as it is conducted in Europe. The overarching theme of the plenary is the interrelationship between integration and separation. Under this theme we would like to address several interrelated topics.

First of all, it can be a question about our own knowledge base and our collaboration with others. STS was born out of engagements with science and technology in fields such as sociology, anthropology, and history. Gradually, the field became institutionalized with dedicated journals, handbooks, departments, and schools. At the same time, STS is currently made up of multiple conceptual and methodological traditions, and these are often geographically situated. How is this epistemic differentiation serving STS? Are we making enough out of the possibilities of interdisciplinary exchange? .

Secondly, our perception of and work to design a relevant publication landscape follows from the previous point. How do we see the landscape as it is? Should we try to increase designated STS journals or is it more important to have a strong presence of STS research in interdisciplinary journals? Do we foster open research, transparency and inclusiveness in the dissemination of our work? Are our journals aligned with Open Science goals and requirements? How do books and book publishers serve our contributions and our community? How do evaluative pressures shape the epistemic contributions and publishing formats we chose and how do we as a community encourage and embrace alternatives?

Thirdly, how we teach and learn STS shapes its collective future(s). The learning and socialization practices of our early career researchers in the present have constitutive effects for STS as a field in the years to come. What do STS early career researchers want from their community in terms of education and exchange and how do they envision both the future of European STS and their place with it?

Fourthly, the European funding and policy landscape is special as it is shaped by a set of quite diverse national systems, which are nevertheless influenced by the homogenizing force of the EU. How is this tension creating its own European epistemic dynamics in STS? And how can a politically engaged field like STS (continue to) inform the apparatuses of research funding and science policy, locate its shortcomings, and help foster effectiveness, inclusiveness, and care?

Finally, we also want to reflect on the issue of Europe: On the one hand, we do not suggest that there is a European STS, but on the other, being situated in Europe influences the way STS is done due to the interrelationships between the EU and different European countries as well as between Europe and other places in the world.

Chair

Maja Horst is professor of Responsible Technology at DTU Technical University of Denmark, Hans Fischer Senior Fellow and Visiting Professor at TUM Technical University of Munich and President of EASST. Her research interests cover science communication, public engagement, sociology of innovation and research management and organization. She chairs the Independent Research Fund Denmark and has been a member of the Danish Council for Research and Innovation Policy. She has also been experimenting with interactive science communication installations for which she received the Danish Science Minister's Communication Prize.

Participants

Ulrike Felt is Professor and head of the Department of Science and Technology Studies at the University of Vienna, member of the Academia Europaea and former president of EASST. Her research mainly focuses on questions of governance and public engagements in contemporary technoscientific democracies as well as on shifting research cultures and related institutional transformations. She has been editor of Science, Technology and Human Valuesas well as of the most recent Handbook of Science and Technology Studies (MIT Press).

Sarah de Rijcke is Professor in Science, Technology, and Innovation Studies & Scientific Director at the Centre for Science and Technology Studies (CWTS) in Leiden, and Co-chair of the Research on Research Institute (RoRI). She has a long-term research interest in examining the interactions between science governance and knowledge creation. Within the vibrant interdisciplinary space of STS, she specializes in social studies of research evaluation.

Sarah Rose Bieszczad is a PhD candidate at the Centre for Science and Technology Studies at Leiden University. Her research examines how European deep-sea researchers navigate changing governance and evaluation systems and the subsequent constitutive effects these larger transitions have on their daily research practices.

Endre Dányi is visiting professor at the Goethe University in Frankfurt am Main, Germany, and university fellow at the Charles Darwin University in Darwin, Australia. He is one of the founding editors of Mattering Press (https://www.matteringpress.org/) – an Open Access book publisher and ongoing experiment in knowledge making and distribution in the social sciences.

Vincenzo Pavone is currently the Director of the Institute for Public Good and Policies (IPP), part of CSIC, the Spanish National Research Council. Scholar in science, technology and society (STS), his most recent work focuses on the social and political implications of the so-called global bioeconomies, with a growing interest on sustainability, circular bioeconomies and democratically generated alternatives to growth-based economies. He is also editor of the book review section of the journal Science and Technology Studies, and co-editor of the EASST Review Journal. More at: https://unboundingsts.wordpress.com

PARALLEL SUBPLENARIES

Date: Thursday July 7, 2022

Time: 17:30-19:00

Subplenary 1

Room N102

IMAGING A POST-GROWTH SOCIETY: SCIENCE, TECHNOLOGY AND INNOVATION BEYOND GROWTH

Roundtable

The feasibility and desirability of endless economic growth is increasingly being questioned by scholars and activists. While envisioning alternative economic models is key to assure the sustainability and wellbeing of present and future generations, few studies have analysed what might be the role of 'innovation' in a post-growth era. Innovating has become the imperative for the survival and expansion of any form of organisation. This sub-plenary starting point is that untangling innovation from growth is key to imagining a post-growth era. If growth is going to be unsustainable, we need new narratives as well as new innovation practices and policies that would accordingly also have to change and increase the scope of the innovation concept itself, beyond technology, into cultural and institutional change, and indeed social life and social order. The STS community has only recently begun to get involved in the debates about post-growth and de-growth. STS contributions may enrich the ways in which we imagine and configure STI systems, which are in turn crucial for enabling a sustainable future and an adaptation to the challenges of the climate crisis. But how science and technology will look like in a system that is not based, and doesn't not rely, on endless growth? Under which conditions STI without growth would be able to flourish? What levels of technological complexity can we reach in a non-growing economy? What policies, infrastructures and organizational forms are needed or are more likely to facilitate a post-growth innovation era? Questions that have been so far rarely asked within STS and STI circles are now at the heart of what this sub-plenary will address.

Participants

Andrea Jiménez is a Lecturer in Information Management at the Information School's University of Sheffield. Her research is centred on the larger geopolitical dimension of innovation discourses embedded in the international development sector. She draws on critical perspectives such as intersectional feminism, decolonial approaches, and data justice and has conducted research in Zambia, Peru and the UK.

Alejandra Boni is Professor at the Universitat Politecnica de Valencia and Deputy Director of Ingenio (CSIC-UPV). Her main areas of research are formative evaluation, learning, human development, grassroots social innovation and participatory action research. She convenes the CYTED netwok Multidimensional Analysis of university-society interactions to enhance well-being in Iberoamerica (2018-2022) which includes 13 institutions. She has been the principal researcher in several research projects on grassroots innovation, development education and human development and has led contracts with local and regional authorities to design policy strategies using participatory design methods. She was involved in research projects and trainings in different European countries, Colombia, Mexico, Peru, South Africa and Nigeria

Adrian Smith is Professor of Technology & Society at the Science Policy Research Unit, University of Sussex. His research analyses the politics and governance of innovation for sustainability, and has involved studies and collaborations with colleagues in Latin America, Europe, India and China. One important strand to this research has involved us working with grassroots movements and their novel initiatives in sustainability; exploring to what extent these activities constitute alternative approaches in innovation, and with what implications for social change.

Chair

Mario Pansera is currently employed as Distinguished Researcher by the UVIGO. He's also affiliated Researcher at the Autonoma University of Barcelona. His work focuses on Responsible Research and Innovation (RRI) and Innovation for degrowth/postgrowth. He gained a PhD in Management at the University of Exeter Business School in 2014. He worked as a research fellow at the University of Bristol from 2017 to 2020. Mario is honorary research fellow at the University of Bristol and international faculty at the Graduate School of Business of the University of Cape Town in South Africa where he teaches Responsible Innovation in the ExeMBA.

Subplenary 2

Room N101

TECHNO-SCIENCE-FICTIONAL FUTURES: METHODS, FORMS, NORMS

Short talks, panel discussion, short film screenings and discussion

Speculative and science fiction are often sources of inspiration for scientists, engineers, and popular culture, while science studies can be a source of inspiration for science fiction writers and artists. Companies and governments often use images and words invoking the future to promote new products, such as medical treatments and devices, autonomous vehicles, and big science investments. This panel explores different ways that speculative and science fiction (SSF) are used not only as a source of visions and imaginaries for scientists, engineers and others but also as a method and device for STS scholars to engage with interlocutors during fieldwork and with wider audiences.

Speakers will be invited to explore some aspects of the role of SFF in different domains, including the Anthropocene, energy and climate change; datafication and AI; space exploration, health, and genetics. There are many different aspects to this, including how SFF shapes the hopes, promises, and fears that appear in the discourses of research agendas, public policy, design, media, and education.

The aim of the sub-plenary is to stimulate the (individual and collective) EASST imagination through paying attention to and engaging with poetic, literary, and artistic renderings of techno-scientific futures. To help realize this aim and to stimulate your imaginations, we are organizing the first-ever short story, flash fiction, and poetry competition for EASST members in conjunction with this sub-plenary. Winners will be announced during the conference and winning entries will be published in EASST Review.

Participants

Laura Watts is a writer, poet, ethnographer of futures, and Senior Lecturer in Energy & Society at University of Edinburgh. Her research & writing is concerned with the effect of 'edge' landscapes on how the future is imagined and made. For the past decade she has been working with the Orkney islands, Scotland, on their energy and data futures. Her book Energy at the End of the World: an Orkney Islands Saga (The MIT Press, 2019) won the Rachel Carson Prize from 4S and was Shortlisted for the Saltire Research Book of the Year. With the Reconstrained Design Group she won the International Cultural Innovation Prize from Centre de Cultura

Contemporània de Barcelona (CCCB) for a community-built energy storage device, the Newton Machine. Her last book was a coedited collection, Energy in Experiment (Mattering Press, 2021), which included a coauthored graphic novel. She runs writing workshops and consults on speculative futures.

Andreas Philippopoulos-Mihalopoulos is an artist, legal theorist and fiction author. He works with performance art, photography and text, as well as sculpture and painting. He is Professor of Law & Theory at the University of Westminster, and Director of *The Westminster Law & Theory Lab*. His fiction includes *The Book of Water*, published in Greek and English.

Katja Mayer is a sociologist and Elise Richter fellow at the University of Vienna, Austria. She has jointly designed the intervention for the conference together with electronic musician and producer Patrick Pulsinger. Among other activities she runs the project "Politics of Openness - Open Data Practices in the Computational Social Sciences" at the Department of Science and Technology Studies. Furthermore, her focus as senior scientist at the Center for Social Innovation (ZSI) is on research and innovation policy.

Organizers

Sally Wyatt is Professor of Digital Cultures and Associate Dean for Research in the Faculty of Arts and Social Sciences at Maastricht University. She was President of EASST, 2001-2005. During lockdown, together with colleagues and students, she co-edited two volumes of poetry and artwork, entitled Quarantine Spring (2020) and Letters in Lockdown (2021). She is currently doing research about the use of AI in image-based clinical decision making.

Nina Klimburg-Witjes is post-doc researcher at the STS Department, University of Vienna. Her research focuses on infrastructures and imaginaries of outer space, and on the politics and practices of digital in/security. She recently published the edited volume “Sensing In/Security: Sensors as Transnational Security Infrastructures” (with GC Bowker & N. Poechhacker, Mattering Press 2021). Nina is an elected member of the EASST council.

Michela Cozza is a sociologist and STS scholar. She is Associate Professor at Mälardalen University-Department of Organization and Management, and an elected member of the EASST Council. She has recently published the book "Key Concepts in Science and Technology Studies" (2021, Studentlitteratur).

Subplenary 3

Room N106

ALGORITHMS, PREDICTION AND NARRATIVES OF FUTURE

Roundtable

Predictive models associated with big data and the use of digital algorithms or machine learning are now part of our everyday lives. The use of navigators or cell phones that drivers make to choose the quickest routes to a destination, or the suggestions of what song to listen to or what book to read have integrated our routines and sound familiar. At the same time, other programs related to identifying the most likely neighborhoods in which a crime will occur, quantifying the creditworthiness of a potential borrower, or creating individualized health risk profiles, fuel dystopian scenarios that interpret digital technologies in light of their capacity for collective and individual monitoring and control, raising important issues related to discrimination and privacy protection.

The will to anticipate the future is certainly not a new phenomenon, but rather yet another attempt to cope with uncertainty. However, as the examples mentioned above show, today's forms of

prediction are characterized by an unprecedented technological mediation. Predicting means foreseeing by automatic calculations, on the basis of data whose quantity is not manageable by the human mind. Obviously, these practices tend to convey a specific frame of the future, as a space of optimization to be achieved through complex technological systems which integrate connected devices, algorithms and platforms.
The automatic construction of knowledge and of the distinction between true and false, poses urgent epistemological and juridical challenges about the mode of functioning of algorithms. Despite the transparency and unlimited openness conveyed by digital technologies, we urgently need to open the black box of algorithms and question their validity, utility, transparency and responsibility. Extending our scrutiny to the digital ecosystem of platforms, predictive models need huge physical infrastructures concentrated in the hands of a few private players of digital sector. The underlying oligopolistic tendency of techno-capitalism also raise questions about the normativity of this emerging socio-technical assemblages. In an increasingly interconnected society where the virtual and the real become blurred, predictive technologies offer a source of knowledge, meaning and truth that reconfigures the very relationships and realities they describe and analyze. The resulting relations are endlessly or chronically brought into being in a continuing process of production, reproduction and amplification of existing social inequalities, of the stigmatization of certain behaviors or socio- demographic features, of the obliteration or the hyper-control of certain segments of the population due to the exclusion of access or binding access to digital technologies – digital divide, free services, etc. The new predictive techniques are therefore techniques capable of forms of knowledge, meaning, truth and falsification, through which new forms of governmentality as well as resistance are emerging. This subplenary intends to explore them by keeping together academics and activists.
Without embracing a dichotomous vision of either research or political engagement, the intention is to bring into the field of science and technology studies people belonging to adjacent social spheres that, however, often do not communicate with each other. The idea is to gather both critical empirically-informed studies and more politically engaged actions around algorithmic predictive practices. The interaction will take place around some common issues, such as: the banalization of prediction and the automation of everyday life; the transparency and opacity of algorithms and subjects; equity, discrimination and self-fulling prophecy; the prediction and the future: imaging future collective life with predictive algorithms.

Participants

Ippolita is an independent and interdisciplinary research group which deals with the critical study of commercial technologies and the philosophy of technology. The group is formed from the intersection of hacking, counterculture and feminism and it conducts a wide-ranging reflection on "technologies of domination" and their social effects. It has published many Italian and international books, including Anime Elettriche (Jaca Book), La rete è libera e democratica. Falso! (Laterza), Tecnologie del Dominio (Meltemi), Il lato oscuro di Google (Milieu), “Etica hacker e anarcocapitalismo” (Milieu). Ippolita directs the Culture Radicali series for the Italian publisher Meltemi. More info at https://www.ippolita.net/

Klaus Hoeyer is professor of Medical Science and Technology Studies at the University of Copenhagen's Center for medical STS (MeST). He has worked extensively with exchange systems for human biological materials and regulatory ethics and recently completed a five-year projected funded by the European Research Council on the politics of intensified data sourcing in healthcare

Noortje Marres is Professor in the Centre for Interdisciplinary Methodologies (CIM) at the University of Warwick (UK). She studied Sociology and Philosophy of Science and Technology at the University of Amsterdam and has published two monographs: Material participation (2012) and Digital Sociology h (2017). She was recently awarded a Leverhulme Fellowship for the project "Beyond the Lab: An Empirical Philosophy of

Intelligent Vehicle Testing" and is the UK PI for the ESRC-funded, international project Shaping AI: Controversy and Closure in Research, Policy and Media. More info at http://noortjemarres.net/

Organizers

Mauro Turrini is a postdoc "Atracción de Talento" at the Instituto de Políticas y Bienes Públicos of the CSIC within the Metrics and Innovation in Science and Technology group. Situated at the intersection of science and technology studies and socio-anthropology of health and illness, He investigate critically and empirically transformations in biomedicine, especially the temporalities of genetics and, more recently, data. Working on the complex relationships between knowledge and power, He is currently interested in risk, diagnosis/screening, procreation, algorithms, and hormonal contraception.

Núria Vallès-Peris works as postdoctoral researcher at the Universitat Autònoma de Barcelona, at the Barcelona Science and Technology Studies Group (STS-b); and visiting lecturer at the Universitat Politècnica de Catalunya, at the Intelligent Data Science and Artificial Intelligence Research Center (IDEAI). She is sociologist, interested in interdisciplinary approaches to the study of the ethical, political and social controversies around robotics and artificial intelligence in care, as well as in the study of (radical) imaginaries.

Subplenary 4

Room N106

SPECULATIVE ECOLOGIES FOR A VULNERABLE WORLD (EARLY CAREER SUBPLENARY)

Roundtable, Collective Conversation

The current environmental and health crises have revealed the constitutive vulnerability of our world, under these circumstances, it is more urgent than ever to embrace those speculative practices that will allow us to explore the possible. A move that should go hand in hand with speculations about the many possible forms of our scholarly practice: how should our modes of research respond to the challenges of our time? How could we renovate our scholarly practices? In this sub-plenary we would like to address these questions drawing in the concept of 'speculative ecologies'.

There is a long-tradition in STS demonstrating that beyond the formal and institutionalized modes of knowledge production, there thrives in our societies modes of impure science and wild research that shows alternative ways to face the challenges of our world. Social movements, civic organizations, and organized collectives have taught us how to pose the challenging questions that our world in crisis needs. In this sub-plenary, we invited early-career scholars to speculate not just with different futures but alternative presents too and how such modes of inhabitation offer other modes of engagement with the world. The speculative practice that we invoke is thus not engaged in the production of fictions or forecasts, on the contrary, it is a practice rooted in the present that resists the fateful future.

We would like to open a dialogue about how different organized collectives engage with speculative ecologies. First, we are interested in those efforts whose practical engagement entails a form of speculation with different ecological relations: from activists of extinction rebellion to scientists that demonstrate how we can learn from nature to respond to the present challenges—just to give two possible cases. Second, we are interested in collective projects aimed at the renovation of our academic environment (or, in our parlance, the ecology of practices of academia), initiatives that create the speculative conditions to bring into existence alternative modes of doing academia.

Chair

Aleksandra Lis-Plesinska is Associate Professor at the Institute of Anthropology and Ethnology at Adam Mickiewicz University in Poznań, Poland. She holds a PhD degree in Sociology and Social Anthropology from the Central European University in Budapest (Hungary). For the last ten years, she has closely studied the intersection between the European and Poland's climate and energy politics, which resulted and the publication of a book with Routledge, titled *Climate and Energy Politics in Poland: Debating Carbon Dioxide and Shale Gas* (2020). Her research specifically focuses on the science-policy nexus, participation of non-experts publics in technological controversies and challenges of the just transition to low carbon energy and transportation systems

Participants

Carlos Cuevas Garcia is a postdoctoral researcher at the Department of Science, Technology and Society of the Technical University Munich, Germany. His research examines how individual and collective identities are made to matter in our interactions with science, technology and innovation policy. His PhD focused on the negotiation of identities in interdisciplinary research. During his postdoctoral projects he has explored the emergence of nascent fields around digitalization, first looking at biofabrication, and then at European robotics with a particular focus on the role of co-creation instruments in the development of service and infrastructure inspection and maintenance robots. Currently he is mobilising his expertise on interdisciplinarity and co-creation as a co-principal investigator of the Horizon2020 project BoostEuroTeQ (strengthening institutional transformations for responsible engineering education in Europe). Carlos studied sociology in Mexico before obtaining an MA in Research Methods and a PhD in Science and Technology Studies from the University of Nottingham, UK.

Clémence Pinel is a postdoc in the MeInWe team within the Centre for Medical Science and Technology Studies, University of Copenhagen. In 2018, she completed her PhD at King's College London and was awarded the Doctoral Prize from the UK Association for Studies in Innovation, Science and Technology (AsSIST-UK). Her work focuses on knowledge production and valuation practices in the life sciences, with a specific interest for data-intensive research. Through ethnographic fieldwork primarily in research laboratories, Clémence explores how scientists make, maintain and utilize data, of different sorts and origins, to produce knowledge within contemporary bioeconomies.

Anne-Sofie Lautrup Sørensen is a PhD fellow in the Technologies in Practice research group at the IT University of Copenhagen. Drawing inspiration from anthropology, STS, studies of Nordic exceptionalism and queer theory, Sørensen's research focuses on questions about age, generation, and knowledge in relation to the climate crisis, with an empirical focus on young climate activists and their local community in the Norwegian oil-capital Stavanger. Sørensen's thesis explores ethnographically how climate change produces a crisis in a national narrative of Norwegian goodness and engages with local struggles to redefine what it means to be and do good as a collective, when the nation state proves an insufficient frame for thinking about the planetary scale

Organizers

Violeta Argudo-Portal is an anthropologist and ethnographer of science and technology specialized in studying biomedicine and life sciences infrastructures. She works as a postdoctoral research associate at the Institute of Public Goods and Policies (IPP), Spanish National Research Council (CSIC). At the IPP, Violeta is part of two projects on genetic susceptibility and the futures of genomics. Over the past years, her work has focused on biomedical research infrastructures and biomedicine in the making, particularly biobanks and T-cell immunotherapy. In 2021, Violeta earned her Ph.D. at Universitat Autònoma de Barcelona. Her thesis merges STS and social anthropology and presents two years of ethnographic fieldwork with biobankers in Spain, exploring their daily work and concerns. She holds a MA in Global Thought, Columbia University in the City of New York (Fulbright Fellow) and a BA in Social and Cultural Anthropology, Universitat de Barcelona.

Adolfo Estalella is Assistant Professor in Social Anthropology at the Complutense University of Madrid (Spain). He is interested in grassroots urbanism and digital cultures and he has investigated the knowledge practices and technologies of neighbourhood organizations and activist movements in urban contexts. A second research line explores (and intervenes) on anthropological modes of inquiry, an endeavour gathered in the xcol platform (http://www.xcol.org). His latest co-edited book is 'Experimental collaborations. Ethnography through fieldwork devices' (Berghahn, 2018), his forthcoming book (co-authored with Alberto Corsín Jiménez) is 'Free Culture and the City: Hackers, Commoners, and Neighbors in Madrid, 1997-2017' (Cornell University Press).

EVENTS AND SOCIAL MEETINGS

Welcome Reception
Wednesday, 6th, July
19:00 - 20:30 hrs

EASST Members Meeting - Room N101
Thursday, 7th, July
12:30 - 14:00 hrs

ERC workshop - Room N111
Friday, 8th, July
12:30 - 14:00 hrs

PhD workshop - Room N109 (see "Special Formats")
Friday, 8th, July
12:30 - 14:00 hrs

Book Presentation: "Handbook of the Anthropology of Technology" - Room N117
Friday, 8th, July
12:30 - 14:00 hrs

Robot(ic)s & STS Meet-up - Room N112
Friday, 8th, July
12:30 - 14:00 hrs

ST&S Editorial Board Session - Room N115
Friday, 8th, July
12:30 - 14:00 hrs

"Uno, nessuno e centomila: academic conferences in the post-pandemic era" - Room N110
Friday, 8th, July
12:30 - 14:00 hrs

Awards Ceremony
Friday, 8th, July
17:30 - 18:30 hrs

Dinner (at “La Casa Encendida”)
Friday, 8th, July
20:30 hrs

Party (at “La Casa Encendida”)
Friday, 8th, July
23:00 hrs

SPECIAL FORMATS

Sensing and making sense of cities as wave fields. Multimodal tour through "hot spots" in Madrid

In this special format, we invite conference participants to join us in a hot sensory exploration of urban spaces in Madrid, where problematizations of heat as sun radiation are particularly public and intimate matters (or rather waves) of concern. As a wave, heat is felt, sensed, measured, visibilized, mapped, contested, and imagined in a sheer variety of modes by means of audiovisual and material/infrastructural productions. A bus will be waiting outside IFEMA and will take us on a 3-hours guided ride to several of Madrid's "hot-spots" that will inspire imaginations and speculations of various and, in some cases, contradictive urban (and personal) responses to heat. The selected localities, the performative experiences, and the complementary presentations, discussions, and inputs will touch upon three hot topics: urban green infrastructures, environmental in/justice, and speculative interventions. This special feature is part of the ERC-wavematters project "Urban vibrations: How physical waves come to matter in contemporary urbanism", which explores how airborne waves, such as noise, 5G, and heat dis- and re-assemble urban experiences, and how cities respond and react to these waves.

Event-Details

Start of the tour: Friday 8th of July, 4 pm.
Meeting Point: outside IFEMA (Av. del Partenón, 5A)
End of the tour: 8th of July, 7 pm.
Closing point: Matadero Madrid (Pl. de Legazpi, 8)

- For participation, please register by sending an E-Mail to mailto:elisabeth.luggauer@hu-berlin.de by 6th of July 22
- The ride will be documented and filmed. By registering, you agree to these terms.
- COVID-19 policy for the bus ride and tour will be announced shortly before the event.

Organizers

Ignacio Farías (HU-Berlin) is professor of urban anthropology at the department of European Ethnology. His research interests concern current ecological and infrastructural transformations of cities and the associated epistemo-political challenges to the democratization of city-making. His most recent work explores the politics of environmental disruptions, from tsunamis over heat to noise. He is also interested in doing urban ethnography as a mode of city making performed with others (designers, initiatives, concerned groups, policy makers) and by other means (moving from textual to material productions).

Elisabeth Luggauer (HU-Berlin) is an urban anthropologist with a special interest in thinking about urban spaces as multispecies and more-than-human assemblages. She is currently a senior researcher in the ERC-WAVEMATTERS-project Urban vibrations: How physical waves come to matter in contemporary urbanism at the Department of European Ethnology at HU-Berlin and explores how bodies are exposed to heat and learn to be affected, as well as multispecies knowledge production about urban heat and multispecies interventions into urban formations and rhythms

Jorge Martín currently works as a public official in Madrid's council and also collaborates as an invited researcher in the ERC-WAVEMATTERS-project Urban vibrations: How physical waves come to matter in contemporary urbanism at the Department of European Ethnology at HU-Berlin exploring how heat is sensed, known and imagined in the case of Madrid's policies and urban projects

Hacking everything. The Cultures and politics of Hackers and Software Workers (a podcast series)

Whether it's geopolitical or security hacking, big-tech's software workers leaking the injustices of their companies, or cryptocurrency geeks gaming the financial markets - people who work with our software and computers, harvest our data, or hack into our systems, are gaining political and cultural significance. This podcast panel invites all researchers who study what it is to be a hacker, computer engineer, or work with computers, software, or digital platforms, and/or what it means to hack technical, individual, state, or corporate powers. As we frame this EASST conference around the politics of technoscientific futures, this panel brings to the fore research around the actors shaping, building, maintaining, hacking, programming, processing, or managing the regimes of data collection, knowledge, and control, within the computing systems we use today. Inspired by research around hacker cultures, such as Chris Kelty's work among free software communities, Biella Coleman's work on the Debian communities (2012) and the politically-motivated hacker collective Anonymous (2014), or Stuart Geiger's embedded ethnography in Wikipedia (2017 with Halfaker) - this panel shines a light on the people who build our opaque and oftentimes contentious technical worlds. By using other modes of knowledge production, we wish to challenge the role of the STS scholar in describing the powers and agencies, and the practices and struggles of hacker or software cultures - a challenge that, in our increasingly complex, commodified technical worlds might never be fulfilled. As an "alternative format" this panel brings its panellists in conversation with the panel organizers in the form of a podcast series. Instead of traditional PowerPoint presentations, panellists will present their research in the form of a 15–20-minute podcast programme - through dialogue with the panel organizers. While panellists will be given the usual time to speak and present their work, the podcast format as an informed conversation is aimed to create another form of engagement with research, pushing academics to discuss their work with a wider audience. With the panellist's consent, this podcast will also be published and made available after the conference is over.

Event-Details

Date: Thursday 7th July 2022
Hour: 9:00 – 12:30
Location: Rooms N110 & 105

Organizers

Paula Bialski is an Associate Professor for Digital Sociology at the University of St. Gallen. She is an ethnographer of digital technologies, looking at contexts of usage as well as production, and she frames her research within cultural, social and media theory in general, and STS in particular. She is currently finishing a book project that looks at mediocrity and slowness of corporate software work and its relationship to our digital infrastructures. Beyond academic work, she loves podcasting and making albums with her band Paula & Karol.

Andreas Bischof is the head of a Research Group at Chemnitz University of Technology and principal investigator in three more research projects, one of which is focusing on alternative applications for healthcare robotics. He has a background in sociology, media communication and cultural anthropology, and studies how humans, society and technology interact with each other. He has also taught courses on podcasting and worked in the German indie music industry for years.

Mace Ojala is an STS scholar, media theorist and an absolute podcast fiend. When not riding the bicycle, sculpting otherworldly soundscapes with synthesizers, or researching software as culture, Mace teaches data visualization, programming and STS topics at IT University of Copenhagen and works as a labrat at the feminist ETHOS Lab there.

Ferment(n)ation: Future Microbiopolitics in the Field of Gastronomy

If we look at reality from a different perspective, in the present certain “technopolitics of the future” are already taking place that do not usually receive any recognition because they do not correspond to the conventional notions neither of technique nor of politics. From the perspective of material politics (Marres), fermentation is a public materiality that, given its heterogeneity and multiscalarity, implodes the political. The special format that we propose will consist of a in situ display of this new and challenging geo-politics of a practice that is expanding around the world as a diaspora of transdisciplinary practices and post-political solidarities. Fermentors and ferments form a ferment(n)ation, a kind of mycelium through which they are related in frequencies that are yet to be investigated. Those who ferment simultaneously, even if they are not aware of it, communicate through those "other microbiopolitical frequencies". The session will consist of a simultaneous display in online format of some fermentation practices that take place in different parts of the planet. At the same time, those attending it will have the opportunity to taste some fermented foods and carry some basic fermentation practices.

Event-Details

Date: Friday 8th July 2022
Hour: 14:00 – 15:30
Location: Rooms N105

Organizers

Iñaki Martínez de Albéniz holds a PhD in Sociology. He is currently Head of Sociology and Social Sciences Department at the University of the Basque Country (Spain). He is also head researcher of INNOkLab, Laboratory for Cultural Innovation. He has been collaborating with Mugaritz Restaurant and Basque Culinary Center since 2012 through curatorial work such as the Science and Gastronomy congress Diálogos de Cocina (https://dialogosdecocina.com/) and the research and exhibition projects “The Candy Project” and “50 glimpses into the contemporary gastronomy movement”. He is member of the technical-committee of the Basque Culinary World Prize

Elena Urieta Bastardés got a degree in Political Science at Complutense University of Madrid (UCM) in 2015 and a master´s degree in Models and Areas in Social Sciences Research at University of the Basque Country (UPV/EHU) in 2016. She recently holds a PhD in Sociology and Anthropology at UCM (2022) through a research called Grasas en acción: un recorrido por la ciencia, la gastronomía y el arte (Fats in action: an approach through science, gastronomy and art). She currently is a postdoctoral researcher in Sociology Department: Methodology and Theory (UCM) and a member of GRESCO (Grupo de Estudios Socioculturales Contemporáneos)

Juan Carlos Arboleya: After finishing his BSc degree in Chemistry, he started his scientific career at the Institute of Food Research (Norwich, United Kingdom). He was interested in the physico-chemical properties of food in order to develop strategies for improving sensory and nutritional properties of foodstuffs. He got his PhD in physical-biochemistry in 2004 by the University of East Anglia, UK and he worked eleven years as Head of Food Microstructure Group at Azti Food Research Center (Spain). He is currently working as Professor and Researcher at the Basque Culinary Center (University of Mondragón, Spain), Head of the Scientific Area and programme director of the Master (MSc) and PhD in Gastronomic Sciences. He is Editor-in-Chief of the International Journal of Gastronomy and Food Science, published by Elsevier.

Ph.D. Workshop

At the 40th anniversary of EASST, we want to reflect upon what STS means for us as researchers in and around the discipline as well as what future we imagine for it. We invite participants to a meeting focused on early-career researchers (ECRs; defined broadly) to discuss STS and our role within it as the field moves forward. If you are early in your academic career, regardless of your age or rank (PhD postdoc etc.) you are welcome for an informal discussion about your engagements, position, and experiences within and around STS. We will discuss such questions as: How do we as ECRs want to engage with the discipline? What do we want from our education and professional development? What should career in STS look like? How do you situate yourself (primarily) towards STS and how do you use it? What kinds of expertise do you bring to research, and what are the typical/expected kinds of expertise in STS? How do different people want to engage with the discipline? What are the political implications and motivations of STS research? How can we make what we do matter for the current world and its various crises (climate change, migration, etc.)? What future(s) do we want for STS and its role within efforts to address such crises?

Event-Details

Date: Friday 8th July 2022
Hour: 12:30 – 14:00
Location: Rooms N109

Organizers

James Besse is a PhD candidate in Science, Technology, and Innovation Studies at the University of Edinburgh. His research examines the implementation of the EU Settlement Scheme and its impacts on vulnerable groups and the development of British e-government. Apart from his PhD James works as a training fellow for the Center for Data Culture and Society and is the Editorial Assistant for the EASST Review.

Sarah Rose Bieszczad is a PhD candidate at the Centre for Science and Technology Studies at Leiden University. Her research examines how European deep-sea researchers navigate changing governance and evaluation systems and the subsequent constitutive effects these larger transitions have on their daily research practices.

EASST 2022

ABSTRACTS BY DATE AND PANEL

Wednesday 6th July

14:00-15:30

Room N109 PANEL 003. CONFLICT, CONTRADICTION, AND CRISIS IN DATA-INTENSIVE HEALTH INNOVATION.

James Shaw, Assistant Professor and Research Director of Artificial Intelligence, Ethics & Health, University of Toronto, Canada
Joseph Donia, PhD Student, Institute of Health Policy, Management & Evaluation, University of Toronto, Canada
Clémence Pinel, PhD, Postdoctoral Fellow, University of Copenhagen, Denmark
Ine Van Hoyweghen, PhD, Research Professor and Director of Life Sciences & Society Lab, KU Leuven, Belgium

Systems of public health and health care are characterized by multiple and at times competing logics. The primary function of such systems is to promote health and heal the sick, however health systems are also important sites of profit-making, labor force participation, and the reproduction of social and professional hierarchies. As stakeholders pursuing data-intensive innovation seek out opportunities for data access and the sale of new technologies in systems of public health and health care, moments of conflict between these logics emerge.

In this panel we aim to highlight papers that explore the present-day moments of conflict and contradiction arising from the effort to build emerging technologies in health care, to better understand the seeds of potential future crises. Such future crises could relate to a variety of issues, and we offer some examples here:

• the erosion of trust between health care providers and patients
• the growing influence of technology companies over health care policy
• the emergence of global markets for the sale of health-related data
• the scaling up of group harms associated with algorithmic outputs

Aligned with the conference theme, we are particularly interested in papers that explore the political economy and relations of power between stakeholders in digital innovation ecosystems in public health and health care, and what these shifting relations signal about potential futures in this domain. We have established an international group of panel convenors, and are interested in contributions from multiple national and health system contexts.

Session 1

208. DEBATING THE INTEGRATION OF ARTIFICIAL INTELLIGENCE INTO ARTIFICIAL REPRODUCTION: ISSUES AND PERSPECTIVES

Kornilia Papanastasiou (National and Kapodistrian University of Athens, Department of History and Philosophy of Science)

The paper considers the integration of Artificial Intelligence (AI) into Artificial Reproduction (Assisted Reproductive Technologies – ART) from an STS perspective. This integration is exemplified in the utilization of Big Data for the construction of algorithms for embryo evaluation, embryo livability prediction, and artificial womb development. ART, and especially IVF (In Vitro Fertilization) has been receiving great attention since 1978, with the successful delivery of the first 'tube baby', Louise Brown. Since then, the integration of cutting-edge science and technology has turned the field of reproduction into one of the most technologically challenging fields of medicine. In this paper, I present research on the way medical and other scientific communities approach the potential scaling up of group harms associated with algorithmic output. My primary sources are influential international science journals (including Nature, Science, Scientific American) and publications from the field of medicine, especially from the ART field. The presentation focuses on how reproduction specialists discuss how AI (based on big data and algorithms) group harms are constituted, fostered and promoted through their implementation in the technological design of ART. My overall dissertation research aims at ushering in opening up this AI technological 'black-box' in order to make visible the biases that are connected with algorithms and Big Data in reproduction. I am especially interested in retrieving biases that are connected to gender, race and class, and further, appropriating AI-ART configurations in the Global South.

415. CONFLICT AND COMPROMISE: THE CASE OF APPLE RESEARCHKIT

Marthe Stevens (iHub, Radboud University Nijmegen)

In recent decades, we have seen increased collaborations between biomedical researchers and large technology companies. The growing influence of these corporations leads to new dependencies and value conflicts that cannot simply be captured by understanding this phenomenon as the invasion of market logic into the biomedical research domain. The orders of worth framework (Boltanski and Thévenot, 2006) provides a richer understanding of the different values that conflict and compromises that are made (Sharon, 2018; Siffels et al., 2021).

This presentation focuses on the case of Apple ResearchKit. In 2015, tech giant Apple launched its ResearchKit software framework that converts every iPhone into a tool both for researchers to build research apps and for iPhone users to contribute to medical research studies by collecting all sorts of health data with their phones. I set out to understand the attraction and influence of this software framework and interviewed researchers (n=18) behind ResearchKit studies in the Netherlands and the United States.
The material shows that researchers frequently run into difficulties while setting up and carrying out their ResearchKit studies. Researchers try to navigate clashes between values such as optimization, recognition and tradition by focusing increasingly on the aesthetics of their research projects, such as the presentation of informed consent and the visualization of questionnaires. This finding highlights one of the ways biomedical research practices are changing as a result of "The Googlization of Biomedical Research" (Sharon, 2016) and leads to a call to study "good" and "bad" ways of designing research study apps.

107. THE HEALTH SECTOR – THE NEW BATTLEGROUND ON DATA AND TECHNOLOGICAL INNOVATION

Roxana Varvara Boboc (National University of Political Studies and Public Administration)

The COVID-19 pandemic has created new sorts of tensions regarding health institutions, health data handling and the extent to which innovation should be employed in time of crisis. From Google and Apple's Exposure Notification System contact tracing app infrastructure to the EU Digital COVID Certificate, the healthcare sector became the main battleground to contain the pandemic. The European Union explicitly prioritized the need to develop "A Europe fit for the digital age" and has put in place funding programs like the Digital Europe Programme to ensure digital solution development and uptake for citizens, businesses and public administrations. As new technologies are penetrating high risk sectors such as the health industry, this paper directs the attention towards how innovation is being framed by the most vocal stakeholders in this public issue. There are multiple voices making their arguments amidst this debate: the European Union, large corporations such as Google and Apple, as well as multiple smaller commercial actors. One of the most pressing issues is sensitive data collection, access and management, as well as who gets to be accountable for any type of risk – public health authorities or private 'innovators'. Based on over 25 public documents – from policy regulations and plans, to public consultations, expert group outputs and reports, this paper investigates the policy-making discourse on innovation in the health sector by creating risk maps. The main takeaway is that conflicting interests are at play, and the regulatory frameworks on new technologies not only fail to mitigate such tensions, but seem to create even more confusion regarding the boundaries of innovation and data access. Therefore, this paper discusses the prerequisites and governing tensions of innovation in health – is digital sovereignty the priority, or is a leading position on the global health market at stake?

207. HEALTH INNOVATION POLICY FOR THE PEOPLE

Shobita Parthasarathy (University of Michigan)

The US government has long played a central role In innovation, both through the patent system and by directly supporting research and development. As they articulate innovation priorities and define how to achieve them, policymakers have relied heavily on the expertise of scientists and market players. This has expanded the technical workforce, increased the numbers of scientific publications and patents, and produced macroeconomic growth. The benefits for the population are less clear: there is growing social and economic inequality and the needs of marginalized groups are invariably ignored. This paper identifies four harms of this approach, specifically for health equity. It does not consider concerns of accessibility or affordability, defining these as health care, rather than innovation, problems. It limits the range of innovators, and also distorts innovation incentives. Finally, it tolerates harmful, and even biased, innovation. The paper concludes with recommendations for addressing these negative consequences: sponsoring much more interdisciplinary research, engaging marginalized communities as experts, conducting equity assessments for proposed research and development projects, and exploring non-market avenues for health innovation.

979. FROM CONTROL TO DECENTRALIZED GOVERNANCE: SHIFTS IN BLOCKCHAIN APPLICATION RESEARCH IN MEDICAL INFORMATICS

Victoria Neumann (Lancaster University) Mike Harding (Lancaster University)

Distributed Ledger Technologies (DLTs), or Blockchain have been hailed as a revolutionizing or disruptive technology. Advocates argue blockchain could be used in all areas for the determination or transfer of ownership of digital or digitalize-able goods. In medical informatics, blockchain applications have been a trending research topic in medical informatics over the past few years as they are viewed as opening up possibilities for new ways of overseeing and controlling the transfer of data between individuals and organizations. This as led to a plethora of use cases, ranging from Electronic Health Records (EHR) and data management, supply chains, incentivized preventative health apps, or creating new health data marketplaces.

This talk has three aims, which will be illuminated on the example of UK-based research project:

1. Drawing on examples and parallels on how medical informatics research has broadly taken over the political ideology originating in the cryptocurrency scene.

2. How applications have failed to gain wider impact and dissemination due to clashing of these political ideologies and different socio-technical and organizational requirements in health care.
3. How the research has moved from individual applications to platform economic models in the form of Decentralized Autonomous Organizations (DAOs). The research focus here moves partly from ideas of individual control over data access towards participation in large-scale collaboration of and with various communities and organizations. The talk ends with an outlook on current and upcoming research topics of decentralized health data governance such as questions of (democratic) participation via voting or delegation mechanisms, the reduction of elitism, and how bureaucratic technologies will not solve accountability or interoperability problems.

Room N101- Panel 008. MICROBES I: THINKING PAST DUALISMS

Salla Sariola (University of Helsinki)
Mikko Jauho (University of Helsinki)
Jose Cañada (University of Exeter)

Microbes are ubiquitous and almost all social practices involve an exchange of microbes. Approaches to microbes and an understanding about how microbes sustain other living beings and the Earth are key to developing sustainable ways of planetary co-existence. Until recently, social sciences have addressed microbes, if at all, only as an external threatening 'Other' capable of generating pathological conditions in humans and livestock. In line with current scientific advancements highlighting the complexity of human-microbe relations, contributions from social sciences are beginning to take interest in the role of more-than-human assemblages and challenge the one-sided definition of microbes as pathogenic.

This panel puts 'the microbe' at the centre stage and queries the social science concepts available to make sense of new knowledge and practices about microbes, also as a way to identify conceptual gaps and challenges that, if addressed, could help in better understanding the role microbes play in social life. The panel approaches the microbe as an analytical entity that does not have a unique fixed character but rather is a heuristic connecting multiple, contingent and situated relations.

This framing requires thinking past dualist and reductionist distinctions crowding classic social theory. Science and technology studies and feminist STS in particular have offered well-articulated criticisms of dualities such as human/animal, subject/object, culture/nature, and self/non-self. Building on and developing these previous criticisms, the panel invites contributions to join in a discussion to advance concepts that attend to the heterogeneous, co-evolving and processual nature of human-nonhuman-environmental-microbe relations, with their complex circularity. One example of an existing concept used to discuss such relationality is the notion of 'holobiont'. The term was extensively used by Lynn Margulis in microbiology and elaborated by Donna Haraway in an interdisciplinary framing to denote symbiotic relations between microbes and humans in terms of assemblages, challenging traditional conceptions of biological individuality and divisions between species. Notions like holobiont are not just analogies for non-microbial sociality but theoretical concepts with the potential of making us rethink some central premises of social theory. To develop adjacent concepts that are able to account for the complex webs of multispecies co-dependency could elaborate on the different types of practices, relations and their situatedness.

We invite contributions exploring various case studies including microbes in environments, food traditions and industries, pandemic regulations, water and sanitation infrastructures, sites of zoonotic human-animal transmission, bodies, and everyday practices, just to mention a few. We welcome speculative thinking while also encouraging authors to consider their cases with novel concepts, reflecting on the availability and/or lack of social scientific tools to understand and analyze their area of interest.

Session 1

540. HUMANS AS MICROBIAL STEWARDS: A DECOLONIAL PERSPECTIVE ON THE MICROBIAL SELF

Ana Barbosa Mendes (Erasmus School of Philosophy. Erasmus University Rotterdam. Netherlands) Julia Mars (Faculty of Science. Radboud University Nijmegen. Netherlands) Hub Zwart (Erasmus School of Philosophy. Erasmus University Rotterdam. Netherlands)

Microbiome research opens up new possibilities for understanding health and the self. We are confronted with the blurred boundaries between our own bodies and non-human organisms, where such realization prompts us to reconsider views of ourselves as autonomous beings. In understanding our human selves as holobionts instead, we are encouraged to understand health as negotiated through the interactions we have with the ecosystems contained within our bodies. Since these interactions have been recognized as an important aspect in fostering a healthy body, microbiome self-management has been increasingly portrayed as a path towards health, subverting the idea of a "microbial self" by advocating for the appropriation of on-human beings to satisfy human bodily needs. This idea of humans as owners and managers of the body, and therefore nature, including other living beings, is anchored in the dualism between human and nature found in western epistemologies. Here, humans are seen as superior and detached from non-human beings, providing the rationale for exploitation of nature for satisfying humans' desires and needs. Contrastingly, indigenous epistemologies recognize humans as intrinsically linked to non-human beings and the environment and through a sense of kinship with these beings, mutual care relationships are developed to sustainably maintain systemic well-being. Using a decolonial approach, dialoguing with indigenous cosmologies, allows us to move away from seeing microbes as biological capital. Therefore, we propose in this paper that human health is co-constructed by humans and microbes rather than through microbial appropriation by humans and that a relationship of mutual care should be developed between humans and microbes. Using a decolonial perspective to microbiome research we re-imagine our

relationship with our microbiome as microbial stewardship. We also explore the consequences that reframing microbiome self-management as microbial stewardship could have for microbiome research and its perceptions and applications.

080. BETWEEN THE GENOTYPE AND THE PHENOTYPE LIES THE MICROBIOME: A SOCIO-EPISTEMOLOGICAL INQUIRY INTO THE MAKING OF POST-GENOMIC KNOWLEDGE

Cécile Fasel (Université de Lausanne, SSP & FBM, STS Lab)

Thanks to development and increasing accessibility of sequencing, bioinformatics and computational technologies, the gut microbiota has become a prolific research object. Microbiome studies have flourished, implicating this so-called "supplementary organ'" in evolutionary, developmental and physiological processes. The growing accessibility of multi-omic and system approaches have also made microbiomics a defining feature of post-genomics. Microbiome is an emblematic object for those aspiring to go beyond XX century alleged 'reductionism' and 'gene-centrism' in life sciences.
My paper explores the technoepistemic tensions involved in the construction/validation of microbiome-related knowledge in post.genomics. I document and analyze the negotiations behind the publication of a paper on microbiota's role in Drosophila's development. The scientists' aim in this work was to demonstrate that the drosophila gut microbiome acts as a developmental buffer (i.e presence/absence of the microbiome masks/unveils the effects of genotypic variations.) While the article and interviews with the authors reveal claims and concepts referring to complex, non-gene-centric and multispecies ecologies of life, the written exchanges between the team, referees and editors question this kind of microbiome research on conceptual, epistemological and ontological ground. Analyzing these exchanges bring to light how (1) unsuitable assemblage of tools and organisms for the question asked, (2) disagreements on what counts as explanation, (3) discrepancies in the use/valuation of theoretical concepts heavily hampered this paper's approval for publication.
As anti-reductionist programs of microbiomics heavily rely on genomics tools, scientists are caught in between two contrasting imperatives. (1) The day to day subversion of these tools required for a post-genomic complexification of their research. (2) A need to abide to the typical metaphors (e.g. mechanism) and inferential styles (e.g. mechanistic claims) needed to get peer recognition. This boundary work, we conclude, is an undocumented – and yet crucial – sociotechnical process producing the paradigm shift towards post-genomics in life sciences.

682. ENVIRONMENT, TASTE AND POROUS GUTS

Kateřina Kolářová (Institute of Sociology, Czech Academy of Sciences) Tereza Stöckelová (Institute of Sociology, Czech Academy of Sciences) Lukáš Senft (Institute of Sociology, Czech Academy of Sciences)

The recent concerns with the diminishing quality of the Western microbiome (cf. Nieves Delgado and Baedke 2021) and the associated health effects map onto the growing interest in how taste receptors shape one's dietary preferences (e.g. Turner et al, 2019). In this context, tastes are explored as "environmental" factors that can trigger the (preexisting) risk of microbiome dysbiosis or even influence the gene expression in future generations. Yet, then taste is explored as a way to manage, modulate, correct and standardize eating to prevent the "pathogenic" and "parasitic" microbes from disturbing the gut homeostasis.
Drawing on our ethnographic research with people living with dysbiotic guts, this paper challenges the normative logic of such a causative understanding of the relationship between taste, dietary preferences, microbiome and environment. To do so, we lean against the concepts of holobionts as "ecological communities" which challenges the binary and linear causality between microbes and pathogenesis (Schneider 2021).
Living with Inflammatory bowel disease (specifically with Crohn's disease and Ulcerative colitis) enacts the impossibility of coherence, self-containment, and other binary aspects considered key to normative definitions of (Western) selfhood. Instead, it models human bodies as radically porous and dependent on microbial metabolism. The ways in which people living with dysbiotic guts make food, eat, taste and sense, not only foreground the 'leakiness' and instability of the bodily boundaries in relation to excreting, waste or intense bodily affects such as pain (Patsavas 2014), they also accentuate the porosity of the body in relationship to more-than-human environments and ecologies. Thinking taste, sensing and food signalling (Landecker 2011 and 2020) with the dysbiotic guts, we want to push against the notion that human bodies are "part of nature" and detail how the bodies are always re/emerging from ecological communities and collaborations.

564. EATING AS A MULTI-SPECIES-PROCESS: HUMAN-MICROBE-RELATIONS IN PERMACULTURE GARDENING

Oona Virtanen (University of Turku, Finland)

This research approaches human-microbe-relations in Permaculture (permanent culture) through eating. Eating is regarded as multi-species-communication and argued to cross the lines of an individual and taking place in between the bodies and environments, in functional food webs and healthy soils. Permaculture practitioners often maintain a garden and try to arrange the practices as ethically as possible including multi-species actors in the garden. By interviewing permaculture-practitioners in Finland the research aims to understand what kind of corporeal knowledge of eating and human-microbe-relationship can be achieved through experimenting the

everyday practices in the garden and touching of non-human and microbial actors. Affects, the non-verbal impressions, are corporeal routes to the knowledge of multi-species-communication.
Eating engages all living creatures in the common resources of our ecosystems: eating can be seen as entanglement with the soil (Bellacasa 2017, 23). Eating as a process can obscure the divisions between self and non-self, inner and outer, subject and environment, eater and being-eaten (e.g.Mol 2008). Human is a multi-species-organism, holobiont, within which the human-microbial-ecosystem is eating. Eating works as an example of non-dualistic-view, where bodies are formed through eating environment and where bodies actually are environment. Microbial and human agency are entangled.
Art based research and ethnography enables embodied and speculative approach in researching often so invisible microbial relationships.

563. AGENTIAL GUTS

Riina Hannula (Helsinki University)

Agential Guts is an ongoing practice of more-than-human care between goats, microbes, and humans. Creating a situated knowledge production platform within our mammalian guts, this practice enables thinking beyond the traditional biological identity of separated bodies. I live with goats and strive to perceive our microbial exchange beyond pathogenic othering.
The multi-species ethnography (Tsing 2015) of the project is different from participant observation and interviews with human interlocutors, because we create knowledge together with goats and microbes that do not speak. Our collaboration contributes to the to soil microflora via grazing and other circulating of the matters. Getting muddy in contaminated diversity can be seen as risky exposure but also beneficial saturation for the set of species in unprecedented ways.
Agential Guts is kin making beyond instrumentalizing governance of different species. This kin-making could be called animal politics as it focuses on nonhuman relationalities beyond categorizing and dichotomizing species but looks at symbiotic and sympathetic bodies in a mutually inclusive, creative becoming (Massumi 2014). The premises of new materialist and post-anthropocentric relational ontologies are embodied in our practice, where matter itself is perceived as intelligent and affective.
Agential cut is a concept where instead of having an object of study and separation between knower and known, we create alternative epistemic cut by entangling and constituting each other (Barad 2017) imagining collective gut. Agential Guts is informed by natural scientific understanding about micro-organisms but enacts microbial materiality in an embodied and affective way trying to push the limits of what multispecies care might mean. The STS approach enables to rethink of the agencies of the material bodies of the assemblage. Agential Guts devices also an art-based method in order to open up doors in understanding microbial companionship from post-anthropocentric standpoint.

Room N106 - PANEL 010. ForeSTS

Liliana Doganova (Mines ParisTech)
Nassima Abdelghafour (Mines ParisTech)
Evan Fisher (University of Toulouse 2 – Jean Jaurès)
Brice Laurent (Mines ParisTech)

This panel aims to bring together STS perspectives on forests. Forests have recently become the object of renewed concerns, as wildfires and deforestation alarms have positioned them as the sentinels of the damages of climate change and environmental degradation, while their capacity to act as carbon sinks has revealed them as a potential venue for fighting climate change by reducing global CO2 emissions. The panel proposes to relate these recent developments to longstanding analyses of forests as the locus of future-making. In line with the conference theme, we invite contributions that examine the multiple temporalities of forests and the processes by which the past, the present and the future are drawn together and acted upon. More broadly, we aspire to position forests as an object for STS: an object that fruitfully lends itself to the categories and methods of STS, and an object that STS should think with if it ambitions to dissect the politics of techno-scientific (and other) futures. We expect participants to propose papers grounded in empirical analysis and addressing themes related (but not limited) to:

• Forest temporalities: notions of sustainability and the long-term future; ecological restoration and conservation of the past; temporal conflicts across different actors (states, firms, local communities, transnational organizations…);

• Forests and knowledge production: scientific and bureaucratic interventions vs. locally embedded practices, forestry and forms of expertise, conservation biology and biodiversity;

• Forests and power dynamics: the role of forest management in state building, colonial expansion, and post-colonial relations; forests and global governance initiatives; forest property regimes and land use conflicts;

• Forest valuations: the multiple (economic, environmental, heritage…) values of forests and the assessment of the ecosystem services they provide, the cultural and political economy of the exploitation of natural forests and the management of forest plantations;

• Forests ontologies and imaginaries: the category of primary (old-growth) forests; the construction of pristine natures, virgin environments and wilderness; the reference states for forest restoration and conservation; human and non-human interventions, disturbances and interactions within forests.

Session 1

475. IMAGINING AND EVALUATING OLIVE ORCHARDS IN EGE

Efe Cengiz (Knowledge Infrastructures Dept, Campus Fryslân, University of Groningen) Anne Beaulieu (Knowledge Infrastructures Dept, Campus Fryslân, University of Groningen) Carol Garzon-Lopez (Knowledge Infrastructures Dept, Campus Fryslân, University of Groningen)

In this paper, we focus on the Turkish coast of the Aegean Sea (Ege) where the most common sites of farming, animal husbandry and beekeeping between the mountains of Kaz and Menteşe are olive orchards. We ask how such forest-like areas can be differently valued by local and global actors.
In this area, where the most common greenery is just small trees and shrubs (Shrub-like heaths, Wild olive, Oak, Juniper, Mountain strawberry, Carob, Labdanum, Blackberry, Bay laurel, Mastic tree), a landscape of endless olive trees seems the closest thing to a forest. Given their very long history, to what extent can these orchards be considered to be forest-like, either culturally or ecologically? Which interactions and adaptations with other species and the environment are enacted that would mean they are structurally and functionally operating as a forest?
We also examine related changes in conception and valuing: how can olive orchards in turn be enacted as an olive cultivation space (where planting density, pruning, harvesting and water and nutrient supply have to be planned and implemented in more or less ecological ways), or a touristic place (hotels and resorts with ties to government officials or prominent businessmen come after ‘wild’ fires in Turkish coasts more often than revitalisation of local plant life) or an industrial space (when heaps of wild olives were cleared for the construction of stone quarries and construction of industry areas).
Intersecting with the temporal and spatial dimensions of these forests are therefore the kinds of imaginaries attached to them that carry ties to the past, present in future as they range across historical and cultural heritage, the provision of foods, economic activity, ecological functions and climate futures.

699. REGROWING DEGRADED FORESTS? CONTROVERSIES ON POST-MINING REHABILITATION AND REVEGETALIZATION TECHNOLOGIES IN FRENCH GUYANA

Nassima Abdelghafour (Centre de Sociologie de l'Innovation, Mines ParisTech) Liliana Doganova (Centre de Sociologie de l'Innovation, Mines ParisTech) Brice Laurent (Centre de Sociologie de l'Innovation, Mines ParisTech)

The territory of French Guyana is almost entirely covered with publicly-owned and managed tropical forests, and at the same time scattered with legal as well as illegal gold mining operations that cause important environmental impacts (deforestation, erosion, diversion of rivers, etc.). As regulations are getting stricter and the legal gold-mining industry is urged to implement post-mining rehabilitation and revegetalization, the question of whether and how it is possible to regrow the forest becomes pressing among regulators, companies and ecological experts. However, there is no clear vision, neither stabilized scientific knowledge nor specific legal standards, on how to rehabilitate and revegetalize sites within the tropical forest that have been degraded by mining operations.
Building on fieldwork (including interviews and observations) that we carried out in French Guyana during several visits from 2019 to 2021, we analyze the debates and ongoing experiments on post-mining rehabilitation and revegetalization. We focus in particular on the comparison of the technologies developed by three companies offering their services to the mining industry. We show that they diverge not only on the appropriate protocols and techniques to use, but also on their definition of what is a successful rehabilitation and revegetalization. Building on the literature in STS that has explored issues related to degraded landscapes (Tsing, 2015 ; Tsing et al., 2017) and ecological reparation (Papadopoulos, Bellacasa and Tacchetti, 2022), we analyze how post-mining rehabilitation and revegetlization practices enact different visions of what a forest is and what it means to regrow it.

268. WHAT IS A FOREST AND HOW SHOULD WE VALUE ITS WORTH?

Tomas Undurraga (Universidad Alberto Hurtado)

There is a contentious discussion among forestry experts in Chile about what is a forest and how to value its worth. In particular, there is a hot debate about whether plantations of exogenous trees – pine and eucalyptus – should be considered forests. Those working for the forestry industry conceive such plantations as forests insofar as they are “green areas” that absorb carbon dioxide. By contrast, conservationists tend to consider that mono-plantations do not count as forests. They argue that mono-plantations do not have the biodiversity and regenerative capacities that characterize forests: plantations often dry the valleys in which they are planted, degrading the soil, and offering limited ecosystem services. The ontological question about what should count as a “forest” is intrinsically linked to the way in which forests are valued. Whereas for the forestry industry the worth of forests is linked to its productivity and economic valuation, for conservationists the worth of forests is multivalent and goes beyond what can be captured by market value. (Native) forests not only reproduce the diversity of flora and fauna that they contain, they also generate quality water, oxygen, shade, and climate regulation, among other benefits. Their worth is often held to be incommensurable (Karpik, 2010) and inter-generational. This dispute is further complicated when the lay public is considered. The worth of forests vary depending on the population that relates to them. In southern Chile, for example, where there are plenty of native forests still standing, pine plantations are generally not considered forests. Meanwhile, in the drier zones of central Chile pine plantations are more frequently considered to be forests because they offer shade and shelter. This paper elaborates on ethnographic research done on the forestry industry and national parks forests, and 22 interviews with experts conducted between 2019 and 2021.

326 FOREST FUTURES: RETHINKING NATURALCULTURAL CONFLICT ZONES AT THE EDGES OF THE WAYANAD WILDLIFE SANCTUARY (INDIA)

Ursula Münster (University of Oslo)

As numerous species rapidly disappear from our ecosystems, environmental humanists and STS scholars are seeking ways of telling "lively stories at the edge of extinction" (Van Dooren 2014), by invoking a "passionate immersion in the lives of nonhuman beings" (Tsing 2010: 203). Such stories seek to formulate alternative futures for species to live and survive together on our shared planet. Identifying the technological and societal challenges and the possibilities for sharing space with Asian elephants in times of anthropogenic ecological crisis represents one such attempt. This paper explores the violent encounters between humans and elephants at a South Indian wildlife sanctuary, which often end deadly for both sides. It argues that a deeper understanding of a forest’s violent interspecies conflicts requires close attention to the ways in which wildlife has co-emerged with human presence over different time scales. The paper situates troublesome human-wildlife relationships in the context of South India’s violent histories of resource extraction, monoculture timber plantations and indigenous dispossession. At the same time, it extends ethnographic attention to the world-making practices of wildlife and other nonhuman beings. Some forest animals lend themselves to a biographic mode of inquiry. Elephants – much like humans – have complex social and cultural lives, evolved over a long life-span, and imprinted by knowledge that has been passed down over generation. Other nonhuman forest protagonists featured in this article – like teak (Tectona Grandis), a hardwood tree species, Lantana Camara, an invasive shrub, or Elephant Endotheliotropic Herpesvirus

(EEHV), a virus endemic to pachyderms – embody human disturbance and violence in different forms. I argue that STS offers unique perspectives for re-conceptualising the forest as co-constituted by people and wildlife, and examining human and nonhuman pasts, presents and futures together, and at the same time.

Room N114 - Panel 018. THE CREATION AND IMPACT OF ROBOT VISIONS AS KEY ELEMENT OF TECHNOSCIENTIFIC FUTURES

Arne Maibaum (TU Berlin)
Andreas Bischof (TU Chemnitz)

When talking about the study of possible futures, it is hard to avoid mentioning robots. Robots and robotic technology play a major role in many imaginaries and visions of future societies, with envisionings of human-robot interactions in every aspect of daily life. Imaginaries of robots are also used to answer large societal crises, in the European context especially the nursing crisis. Robots in general are often framed as help in challenging scenarios, for example as aid in reactor accidents, to solve loneliness, or to save industries.

In this panel, we want to discuss the creation and impact of such technoscientific futures of robots in society. We welcome talks about nationwide socio-technological imaginaries, e.g. the robotics policies of Japan or Korea, as well as about visions of robotic futures and their consequences, current or historical. Moreover, we want to talk about the real-world materialization of these visions and imaginaries, especially in the form of concrete scenarios and prototyping practices. We are particularly interested in examining prototyping practices as moments where imaginaries, concrete restrictions, as well as the "mangle of practice" of socio-material innovation, intermingle. In robotics research and development particularly, prototypes are an amalgamation of discursive forces, political desires, available technologies, and opportunities for "user contact." But also video prototypes, visualizations or pop cultural references play a crucial role in both connecting technology to societal visions and at the same time narrowing down the corridor of possible use scenarios of robotic applications. We are seeking theoretical, empirical, and practical examples of the creation, construction, and shaping of the technoscientific futures of robotics.

Session 1

193. GRIEFBOTS ARE HERE, BUT… WILL THEY CHANGE THE WAY WE GRIEVE AND REMEMBER THE DEAD?

Belén Jiménez (Universitat Oberta de Catalunya) Ignacio Brescó (Universidad Autónoma de Madrid)

There is a growing number of new digital technologies mediating the experiences of grief and the continuing bonds between the bereaved and their loved ones following death. One of the most recent technological developments is the “griefbot”. Based on the digital footprint of the deceased, griefbots allow two-way communication between mourners and the digital version of the dead through a conversational interface or chat. This paper explores the mediational role that griefbots might have in the grieving process vis-à-vis that of other digital technologies, such as social media services or digital memorials on the Internet. After briefly reviewing the new possibilities offered by the Internet in the way people relate with the dead, we delve into the particularities of griefbots, focusing on the two-way communication afforded by this technology and the sense of simulation derived from the virtual interaction between the living and the dead. Discussion leads us to emphasize that, while both the Internet and griefbots bring a significant spatial and temporal expansion to the grief experience –affording a more direct way to communicate with the dead anywhere and at any time– they differ in that, unlike the socially shared virtual space between mourners and loved ones in most digital memorials, griefbots imply a private conversational space between the mourner and the deceased person. This paper will also explore some ethical issues that griefbots, as a profit-oriented afterlife industry, might raise for both mourners and the dead in our increasingly digital societies, and the social attitudes of people towards this subject.

157. BECOMING RESPONSIVE TOGETHER: ANTICIPATING AND TACKLING THE PROMISES AND RISKS OF ROBOTICS IN AGED CARE

Dirk RM Lukkien (Utrecht University / Vilans) Henk Herman Nap (Vilans), Wouter P.C. Boon (Utrecht University) Alexander Peine (Utrecht University) Ellen H.M. Moors (Utrecht University)

This paper discusses opportunities and barriers for responsible innovation (RI) in the field of care robotics for aged care. It is recognized that the proper embedding of a socially assistive care robot requires innovators and other stakeholders to actively anticipate and reflect on, and be responsive to promises and risks and to societal values, needs and expectations (Sharkey & Sharkey, 2012; Stahl & Coeckelbergh, 2016; Vandemeulebroucke et al., 2018). However, limited empirical evidence is still available about how RI is addressed in practice, i.e. what decisions and actions are taken in the design of care robots and their use in local contexts of care (Lukkien et al., 2021). To gain insight into this gap, this paper investigates experiences in the GUARDIAN project that is part of the European Active and Assisted Living (AAL) program. We first report on efforts taken to stimulate project partners to learn together and with users how RI can be addressed in practice. Using a mixed-methods approach, the perspectives of users and developers on opportunities for RI are explored during the co-design and testing of

prototypes with end-users. Based on the results, we discuss the evolving imaginaries of care robots in aged care, including some of the qualities these technologies should possess for them to support older people and their (in)formal caregivers in a valuable and responsible way. Also, we discuss some opportunities and challenges for RI encountered during research and development projects such as GUARDIAN. In particular, we argue that RI takes time when it needs to be articulated in the muddled realities of prototyping practice, even when early recognized as a shared responsibility.

730. FROM ANIMAL LABORANS TO HOMO FABER: THE PROMISES OF COLLABORATIVE ROBOTICS FOR HEALTHCARE.

Joaquín Yrivarren (Universidad Autónoma Barcelona) Miquel Domenech (Universidad Autónoma Barcelona)

What are the promises of a global company producing collaborative robots that aims to enter the healthcare segment? And how does it put them into practice? These questions point to a central issue in STS: the creation of robotics-related technoscientific futures. The proposal here is to strengthen the dialogue between STS and Business Research, emphasizing both the creation of socio-technical imaginaries and the practice of strategising within an organization that is changing. Based on the "Robot Embedded in a Network" approach, useful to circumvent the RHI dualism, in this paper we try to understand the organizational production context of robotic solutions. We argue that the robotics' value proposition put the distinction between animal laborans and homo faber upside down, making it appear as a positive and liberating one –opposing the way Arent used it in her critique of the technique-thinking bifurcation. However, the promise of being an homo faber thanks to automation is often misled if taken as a mere value transfer from industry to services. Rather, it may be better understood as an innovation effect, aimed to create value as a result of a current and uncertain techno-economic work, not by inertia. Our argument unfolds through a qualitative case study on the company ABB Ltd. We analyze the organizational change undertaken by the company from 2019 to 2021 to match the opportunities of digitalization. We describe how the company's robotics business created and communicated its strategic vision for entering the healthcare segment. And the way it materialized this vision through an incubator, where a team of engineers began prototyping collaborative robots for a field little known to them: clinical laboratories. Finally, we discuss the limitations of animal laborans and homo faber dualism from a pragmatist approach focusing on the material culture of contemporary societies.

649. THE CONSTRUCTION OF THE POSSIBLE. FROM THE RADICAL IMAGINARY TO ROBOTICS

Miquel Domènech, (Barcelona Science and Technology Studies Group (STS-b), Universitat Autònoma de Barcelona) Núria Vallès-Peris (Barcelona Science and Technology Studies Group (STS-b), Universitat Autònoma de Barcelona|Intelligent Data Science and Artificial Intelligence Research Center (IDEAI-UPC), Universitat Politècnica de Catalunya - BarcelonaTech)

The study of the possible futures is intimately related with the study of imaginaries. In the STS, the study of imaginaries of robotics revolves around a double dimension of the same process: on the one hand the imaginaries embedded in the artefacts, that contribute to configurate the mediations of that artefact, and; on the other hand, the different mobilized imaginaries about robots, that accompany some ideologies, forms of interaction, regulations or policies. But, how is made possible an imaginary? Or, in other words, how is made thinkable a robot?

In this paper we explore "the construction of the possible". We analyze how a group of engineers and computer scientists design a social robot during an experimental project. In their own words, they have to imagine a prototype of robot that it is not possible to do with the current existing technologies. We depart from a notion of imaginaries not as individual creations or mere projections of the future, but as an organized field of social practices and materiality. Thus, we analyze the practices and narratives of the roboticists team during the process of imagining a robot.

A central idea in our research is the distinction between the instituted and the instituting/radical imaginary. During the robot's design process, the radical imaginary - that has the potential of creating what there is not (poiesis)- becomes an instituted imaginary –that contains and materializes the existing ideas, values, or relations. During the experimental design, the potentiality of the radical, of thinking artifacts that accompany new societies, is interwoven with the conditions of possibility in a particular context, that has to do with organizational, political and economic matters. The robotics design process becomes then the construction of the possible, the process by which the word participates in imagining a robot that reproduces its life.

417. MACHINES OF LOVING GRACE?: IDENTIFYING CONFLICT, CONFLUENCE AND OMISSIONS IN SOCIOTECHNICAL IMAGINARIES OF ROBOTIC CARE

Stevienna de Saille (University of Sheffield) Alice Greenwood (University of Sheffield) David Cameron (University of Sheffield)

Although technological innovation in digital and robotic applications are increasingly touted as vital to addressing the expanding health-social care needs of aging European populations, research comparing stakeholder expectations of what that might look like on a systemic level is sparse.
Identifying misalignment of expectations can enhance national research programmes and improve prototyping, but is also needed to embed responsible innovation practices which can go beyond the usual calls for public and stakeholder engagement and consider the wider ecosystem in which such activities are taking place. What is included in these imaginaries and what – particularly with regard to the environmental costs of ramping up technological delivery of health-social care at scale – is left out? We report the results of a project using LEGO Serious Play as a method for collecting data on socio-technical “imaginaries” (identified by Jasanoff and colleagues as collectively achieved, systemic visions of social transformation through technology) of robot-enabled care held by diverse stakeholders across the health-social care ecosystem in the UK, including roboticists, administrators, carers, care users and general publics. The research is aligned to the UKRI-funded Trustworthy Autonomous Systems Hub, as a means of using far-upstream co-production to improve engineer's understanding of what potential stakeholders expect from the introduction of robots into existing social care arrangements. By examining where imaginaries cohere and conflict and what is left out before such systems are in place, we hope to contribute to more desirable, ecologically stable, resource-aware development trajectories which can avoid (rather than be directed by) technologically deterministic scenarios which may only serve to increase the vulnerability of those needing care, as well as creating new burdens for care staff.

Room N118 - Panel 019. RESPONSIBLE RESEARCH ASSESSMENT AND STS

Alex Rushforth (CWTS, Leiden University, Netherlands)
Marta Sienkiewicz (CWTS, Leiden University, Netherlands)
Jochem Zuijderwijk (CWTS, Leiden University, Netherlands)
Sarah De Rijcke (CWTS, Leiden University, Netherland

Over the past decade campaigners and policymakers have become increasingly concerned with what they consider narrow, harmful and 'irresponsible' recognition and reward criteria used in academic research assessments. Inspired by Responsible Research and Innovation frameworks, the term Responsible Research Assessment has recently come into vogue among campaigners and reformist research organizations. Here the term is evoked as a deliberately underspecified umbrella label which calls on research assessment to change in order to better meet various broader research culture reform agendas. For instance, as well as targeting inappropriate uses of research performance metrics in assessments of individuals, institutions and funding proposals (e.g. prompted by the Leiden Manifesto, DORA Declaration, Metric Tide), the Responsible Research Assessment discourse also calls on research assessments to become more pluralistic and get better at recognizing and rewarding research activities like open access publishing, data sharing, research integrity, and ensuring equity and inclusion.

Responsible Research Assessment can thus be seen as an attempt at a social innovation (Rip 2016) centered around encouraging (or 'nudging') various actors in the research system into adopting more 'responsible' roles and responsibilities in their research assessment practices. Simultaneously, the Responsible Research Assessment discourse is about generating interest and momentum for alternative 'responsible' assessment practices to be developed, tested and implemented. Witness for example ongoing development, piloting and implementation of alternative assessment tools like narrative CVs and new standards to recognize and reward societal relevance and impact, research integrity, open science, equity and inclusion, each of which promise to counteract dysfunctions in current mainstream research assessment practices.

As STS research on the Responsible Research Assessment 'field' is currently rather fragmented, we invite contributions on one or more of the following topics:

Empirical case studies of international, regional, national, organizational and/or professional- led research assessment reform initiatives and the emergence of novel 'responsible' assessment tools. What are the organizational, institutional and infrastructural challenges in translating research assessment reforms into practice and how do these play out in different settings?

The discursive, material and practical construction of Responsible Research Assessment in policy and institutional contexts – what are the overlaps and discontinuities with earlier 'responsibility' discourses in research and innovation policy?

How should STS researchers respond to the emerging Responsible Research Assessment field – for example, through critique, through attempting to reflect on and improve practices in this space, and/or through reflexive consideration of our own roles and responsibilities as professionals routinely engaged in assessment activities?

Session 1

076. EUROPEAN RECOMMENDATIONS ON RESPONSIBLE RESEARCH ASSESSMENT

Janne Pölönen (Federation of Finnish Learned Societies) Henriikka Mustajoki (Federation of Finnish Learned Societies)

Responsible research assessment entails recognizing diversity of research outputs, activities, missions, and difference between fields, as well as rewarding open science practices. Slow uptake of responsible assessment policies at institutions is partly due to lack of qualitative and quantitative data needed to document the broader range of merits for assessments.
In recent years, implementation of responsible research assessment has been promoted by national recommendations in three European countries (the Netherlands 2019, Finland 2020, and Norway 2021). Most recently, the European Commission aims to facilitate and speed up changes with a European agreement on a reform of the research assessment system.
We analyze and compare the European Commision and three national documents on responsible assessment to show overlaps and differences in construction of policies, as well as continuities and discontinuities with earlier recommendations in DORA (2012), the Leiden manifesto (2015), and the Metric tide (2015).
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745. TRACING THE EMERGENCE AND DEVELOPMENT OF RESPONSIBILITY AGENDAS IN CONTEMPORARY RESEARCH ASSESSMENT

Alex Rushforth (CWTS, Leiden University)

Today the language of responsibility permeates many areas of contemporary economic and social life (Rip, 2020). The academic domain of research assessment is one such example, with multiple agents calling for reforms. Mostly these calls emanated from academic research communities themselves, and subsequently taken up by universities, funders, and policymakers.
But what exactly is meant by responsibility in the context of research assessment reforms and how has this normative concept been picked up, translated and mobilized by different actor coalitions over time?
This talk will briefly outline and compare three articulations of responsibility that have emerged and evolved among various actor coalitions in recent times: first among professional bibliometrics research communities over (mis)uses of research metrics; second involving the promotion of good practice principles in the form of the Leiden Manifesto, San Francisco DORA, and Metric Tide Report (which coined the umbrella label 'Responsible Metrics'); thirdly, calls for responsible research metrics have recently morphed under wider umbrella labels 'Responsible Research Assessment', which envisions research assessment as a vehicle to reform academic research cultures more broadly.
To trace and contrast key characteristics of these responsibility articulations, I draw on Rip's (2020) framework for analyzing responsibility agendas in science and innovation. This involves asking: which actors are being called on to become more responsible (and responsible to whom or to what)? Why and through what means are said actors expected to develop new responsibilities? And critically where are limits of responsibility being drawn (e.g. which actors and issues are not being targeted with reforms)?
This analysis will provide useful means for theorizing the emergence and development of professional change movements around which momentum is currently growing in multiple regions and countries, and seems likely to reshape assessment practices in consequential but currently unknown ways.

802. KEY PLAYERS IN THE ASSESSMENT BUSINESS: GROUP LEADERS' UNDERSTANDINGS OF RESPONSIBLE VALUATION PRACTICES

Vera Ulmer (University of Vienna)

Group leaders engage routinely in a variety of research assessments and can draw on manifold experiences, in which they or their contributions were assessed. Hence, group leaders' stories about their valuation practices and their understanding of those practices in terms of responsibility offer valuable insights into the value ecologies and relations at work in academia. In the context of publishing and especially when it comes to authorship the relevance of their valuation practices is particularly apparent. Group leaders usually have the last say when it comes to deciding who is author on a paper and to attributing specific positions in the list of authors. This in turn has to be seen as a materialization of recognition and reward. In doing so group leaders have to balance a number of issues, e.g., their role in the socialization process of PhDs, specifically with regard to publication practices, while at the same time also having to care for the Postdocs for whom the place on a paper might become decisive for their future career.
My presentation will focus on group leaders' understandings of the responsibility related to their valuation practices, as they have a key role when it comes to a PhD's but also a postdoc's future career in academia. Building on interview data with group leaders from the life sciences and physics, I will outline how their extensive experiences in academia are entangled with and shape their own assessment practices and the related conceptualizations of their responsibility. Hence, I will examine which valuation practices related to authorship and publication group leaders deem responsible and how they justify them.

599. VALUING IN TRANSITION: VALUOGRAPHY OF DUTCH RESEARCH ASSESSMENT REFORM 'RECOGNITION & REWARDS'

Marta Sienkiewicz (Centre for Science and Technology Studies, Leiden University) Thomas Franssen (Centre for Science and Technology Studies, Leiden University)

Research assessment reforms seek to transform the ways in which research (e)valuation processes and practices take place in academia. They might seek to introduce new (e)valuation practices or reconfigure the dominant valuation regime in an effort to change what is valued in the science system. Reform processes create moments of instability during which the relation between present registers of valuing may change. A new value register might gain prominence, others become displaced, or enactments of specific values, such as 'research quality', might shift.

In the context of a nationwide initiative of reforming research assessment in the Netherlands, called Recognition & Rewards, this paper aims to understand how registers of valuing (Heuts and Mol, 2013) underpinning research (e)valuation practices and processes change. All Dutch research universities translated the reform principles of 'Recognition & Rewards', set out in a strategic policy document, into 'local' visions fit for their organisations. By analysing these future visions in conjunction with past strategic plans of Dutch universities, the paper explores the role of strategic policy documents in enacting valuation shifts through their 'modifying work' (Asdal, 2015). It is centred on valuographic document analysis (Dussauge et al., 2015), focused on tracing the shifts in registers of valuing enacted via strategic visions that describe the future of academic assessments.

The paper contributes empirical understanding to the way in which reform propositions modify existing, or introduce new, registers of valuing. Specifically, it analyses how registers of valuing are being displayed, transformed or displaced within the Dutch science system through this particular research assessment reform initiative and the extent to which this shift challenges the dominant valuation regime (Fochler et al., 2016) of research excellence.

Room N108 - Panel 029 INFRASTRUCTURES OF WELFARE

Doris Allhutter (Austrian Academy of Sciences)
Anne Kaun (SÖDERTÖRN UNIVERSITY)
Stine Lomborg (University of Copenhagen)
Karolina Sztandar-Sztanderska (University of Warsaw)
Christian Pentzold (University of Leipzig)

In recent years, the welfare sector has been facing increasing demands and shrinking resources across the EU and is imagined to be radically transformed by automation and AI-enhancement. Automation is suggested as a response to calls for greater efficiency through data-driven welfare provision and freeing resources to better support the flourishing of citizens in society. The past five years of scholarship have seen a steady stream of critical studies of algorithms, datafication and AI within the human and social sciences in particular. These studies have commonly called for accountability of technical systems, data ethics, transparency and regulatory oversight to ensure human justice in ADM systems. At the same time, reality is rife with examples of violations of human rights by way of privacy breaches, inherent biases in automated systems, and discriminatory impacts (e.g., Human Rights Watch 2021). Critical examples were found across the globe, e.g. in the public sector's use of data excess for fraud detection, distribution of welfare benefits and profiling of (vulnerable) citizens.The notion of 'infrastructures of welfare' (Allhutter &Kaun forthcoming) suggests that the implementation of ADM systems is closely entangled with a transformation of administrative work practices and of the relationship between citizens and the state.

This panel addresses the digital transformation of public welfare and aims to examine the implications of the automation of core welfare services including social services such as employment services, healthcare and social benefits provision. It invites scholars from science and technology studies, political science, sociology, organization studies, administrative science, computer science and beyond for contributions on algorithmic welfare from an interdisciplinary perspective. Contributions may address the following questions and more:

How is welfare automated across Europe and beyond?How is automated decision-making in the public sector co-produced with a transformation of welfare?How is the relationship between citizens and the state reconstituted with emerging ADM welfare infrastructures? How can the algorithmic governance enacted by welfare infrastructures be theorized?

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Session 1

828. RECONFIGURING 'UNEMPLOYMENT' THROUGH AUTOMATED DECISION-MAKING IN EMPLOYMENT SERVICES

Doris Allhutter (Austrian Academy of Sciences)

Due to increasing unemployment numbers and shrinking resources in employment services, calls for more efficiency and effectiveness of active labour market programs are getting louder across the European Union. Countries such as Germany, Austria, Switzerland, Poland, The Netherlands, Denmark, and Sweden have contracted (semi-)automated decision-making systems that assist caseworkers in the care of job seekers. Many of these systems categorize and profile job seekers based on characteristics such as age, gender, education, profession, impairment, address, duration of unemployment to then grant them different levels of service, support, and training for their reintegration into the labour market. Referring to specific cases, this contribution researches the conceptualization of 'unemployment' modelled in these systems and discusses their fit with understandings of unemployment buttressing the public mandate of employment services.

827. THE DANGER OF CITIZEN DOMINATION THROUGH ALGORITHMIC DECISION-MAKING IN THE PUBLIC SECTOR

Jana Misic (University of Twente and Rathenau Institute, The Hague)

Applying for and gaining welfare benefits from the government is a different practice than a decade ago. Digital technologies, including emerging ones such as artificial intelligence and big data, are increasingly popular in the public services sector. One such instance is a pilot project employing citizen profiling through artificial intelligence to implement a more efficient welfare policy in The Hague. The 'Bijstand' (prim. trans. 'Assistance') project relies on the use of machine learning to detect unemployed citizens that could be most efficiently helped by the

municipality in finding employment. Intuitively, the deployment of such projects has a potentially negative impact on how just and fair procedures of access to employment are and is, therefore, a cause for concern with respect to citizens' wellbeing.
In this paper, I aim to validate or challenge the intuition that the citizens who are subjected to public sector decision-making algorithms are in fact dominated upon. Is it feasible or fair to call the algorithmic toll a dominator or should we focus attention on the human agents? I draw on the neo-republican concept of freedom as non-domination and argue for the importance of investigating the potential for domination as a structurally constituted form of power when algorithmization of public services takes place. Going beyond, I combine the insights from the neo-republican theory of domination with applied ethics of technology, drawing on the relationships between virtues of freedom and wellbeing vis-a-vis algorithmic accountability. The case study reveals that a new procedural element of unaccountable decision-making is being introduced into the welfare services. A hopeful takeaway from using the neo-republican lens shows that the state can be a guarantor of freedom by establishing the right procedures and venues for the citizens to challenge algorithmic decision-making.

338. CUI BONO ALGORITHMUS: A CRITICAL DATA STUDIES EXPLORATION OF PUBLIC EMPLOYMENT SERVICE ALGORITHMIC PROFILING

Patrick Gallagher (Waterford Institute of Technology) Ray Griffin (Waterford Institute of Technology)

One-third of OECD countries, 13 of the thirty-six members, use algorithmic profiling to deliver public employment services (PES). Each system, with subtle variations, aspires to parse those at risk of long-term unemployment from the frictionally unemployed and offer enhanced services to those who would benefit from them most. However, despite such systems being implemented variously over the past 25 years, there is no dominant design or standardised methods, and each implementation addresses the problem anew. Revealingly, many countries have refused to implement systems or abandoned implementations at various stages.
Taking a critical data studies approach, we explore three exemplar implementations (Ireland-PEX, Austria-AMAS and UK - JSCI) and lance the techno-utopian solutionism by investigating the studied disinterest in accuracy and misclassification. By way of empirics, we carefully assemble our first-hand interactions with those who commission, design and maintain the profiling systems, with all available secondary data on the systems. By peeking into the black-box of these data infrastructures, we surface the standard practice of ciphering the 'forecasting accuracy rate' as an overall reported accuracy rate, thus inflating the technologies capabilities by omitting false positives. This blatant disregard for operational accuracy exposes the true purpose of the infrastructure to resolve the fixed capacity of PES caseworkers with the variable demand for caseworker services as unemployment rates rise and fall. This data infrastructure is designed to protect PES employees rather than being carelessly inattentive to those who are included and excluded from PES caseworkers.
Labour market algorithms represent the state-in-action (Fassin et al., 2015) at the point of care of vulnerable citizens with entitlements (Hemerijck, 2015), and so are beyond public good or public-concern algorithms (Taylor, 2016). In this context, these paradigmatic case deployments raise deeper questions around democracy and how the state adopts technologies to administer, govern and construct welfare and care.

869. POLITICS, ETHICS AND INFRASTRUCTURES OF UK SOCIAL CARE DATA

Cian O'Donovan (University College London) Melanie Smallman (University College London) James Wilson (University College London)

The pandemic has hit no public sector harder than social care. Two years in, public policy for social care and long-term care in many countries is committed to building more resilient care infrastructures. Increased data-use features prominently. This paper investigates the ways social care data and society have shaped each other during the pandemic and asks what this tell us about the role data ethics and data politics plays more broadly in public sectors.
Examining data use in the United Kingdom, we show that despite some impressive interventions, the benefits of data systems built during the pandemic are not shared or even agreed by all. Data is being used to make decisions today in ways not agreed initially by providers. And notwithstanding critical attention from practitioners and academics, significant problems remain, not least that people who pay for their own care are invisible in national data, as are many older people living in care homes.
These issues raise conceptual concerns. For one, how to mediate conflicting imperatives for more data, minimal data and no data. Also, how to understand how data infrastructures are implicated in post-pandemic bio-digital transformations. That is, how data not only directs attention to people it deems in need of care, but also how data infrastructures transform the conditions and subjectivities of vulnerability and neglect. Understanding what's at stake and for whom within these transformations is critical for post-pandemic theory, practice and policy.

927. TRANSFORMATION OF ADMINISTRATIVE WORK PRACTICES – THE EVOLUTION OF ALGORITHMIC PROFILING IN WELFARE SERVICES IN IRELAND AND FRANCE

Antoinette Jordan (Waterford Institute of Technology, Ireland) Alizée Delpierre (Sciences Po, Center for the Sociology of Organizations (CSO)) Zeta Dooly (Waterford Institute of Technology, Ireland) Didier Demazière (Sciences Po, Center for the Sociology of Organizations (CSO)) Ray Griffin (Waterford Institute of Technology Ireland)

Main arguments.
Despite shrinking resources and global deployments of welfare automation, failed and abandoned deployments are common (Allhutter et al., 2020; Matty, 2013; Riipinen, 2011). This paper explores the continued deployment of algorithmic profiling and digitalisation in Ireland and France, in particular exploring the transformation of administrative practices from policy to code (Danaher et al., 2017), and the changing role of PES case worker.
Methods.
This work draws on ethnographic assemblages of automated decision making in PES, in France and Ireland. We draw on Foucault's concept of governmentality, exploring how systems are assembled and negotiated - through policy evaluation and interviews with government officers, IT contractors, data scientists, policy officials, researchers, trade unions, PES employees including case workers, and AI project managers.
Contribution.
This work traces the genealogy of digital infrastructures of welfare in Ireland and France, examining how welfare is now automated in both countries. We look at the transformation of administrative practices, in particular the role of the government case worker and their resistance (or lack of) to ADM. This lack of resistance is evident in both countries and we explore two stories of welfare digitalisation and algorithmic profiling, two countries that have not abandoned this digitalisation, unlike many others.
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Room N107 - Panel 036. CARE-FUL DATAFIED FUTURES AND TECHNOPOLITICS OF CARE

Irina Zakharova (Centre for Media, Communication and Information Research (ZeMKI) & Institute for Information Management (ifib) at the University of Bremen)

This open panel takes as a starting point the “double vision of care” (Linden & Lydahl 2021) encompassing both ‘ethico-political obligations’ (Puig de la Bellacasa 2017) and practices of local fine-tuning and tinkering (Mol 2008) required to maintain and continue our datafied society. How can care be integrated in data politics and what dark sides can it potentially bring forth (Martin et al. 2015)? How can research and design of socio-technical data systems be more attentive to the subjectivities, affections, and bodies of datafied cyborg selves (Thompson 2020)? How can academic inquiry be more sensitive and care-ful in its analysis of techno- and data politics? Building upon reviving academic discourses on care in STS, this panel aims to explore the possibilities and challenges of care as technopolitical endeavour for the future of our datafied society.

Many scholars have shown how datafication processes—rendering social realities into data and back—are reconfiguring various societal domains from education and health to politics. These datafication processes are performed through various socio-technical data systems. Their techno- and data politics slip into our lives and become inherent parts of states’ governance, organisations’ work, and the everyday. At the same time, data systems providers often position their products as ‘solutions’ to multiple crises society is currently facing. These promises to create better worlds, however, elevate some people and societal practices and marginalise others. Feminist and critical data studies (D'Ignazio & Klein 2020, Cifor et al. 2019) continue the long tradition of feminist STS scholarship (Mol et al. 2010, Tronto 1993) in troubling technopolitics by pinpointing when, where, and for whom these promises fail, and by showing care and solidarity with the marginalised, the invisible, and the othered. They commit to “taking sides, participating, acting, making a choice, taking a position, but without taking for granted a general or fundamental principle on which these actions would safely and coherently be grounded” (López-Gómez 2019, p.10).

Within this strain of thought, this panel invites examples of care-ful or care-less datafication processes already taking place and imagine more care-ful datafication futures for empirical practice and academic inquiry. Topics can include reflections on existing theories, methodologies, and technopolitics that lack care or present its dark sides, and speculations about futures where promises of the better worlds follow the needs and voices of those affected by manifold datafication processes.

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1054. CHOREOGRAPHY OF REGIONAL CARE: ASSEMBLING DIFFERENT RHYTHMS AND MOVEMENTS FROM A REGIONAL COORDINATION CENTRE

Nienke van Pijkeren (Erasmus University Rotterdam) Iris Wallenburg (Erasmus University Rotterdam) Roland Bal (Erasmus University Rotterdam)

The region is increasingly presented as a promising scale to organizegood care. Increasing care complexity, growing numbers of chronically ill patientsand pressing shortages of staffare said to urge a reordering of how and where care is organized and provided.Regionalization involves collaboration across professionaland organizational boundaries and movement of patients following the availability of care. Quantified data on ‘vulnerable citizens’ and ‘number of available crisis beds’ in a particular regionare used as a coordinating mechanism to provide insights into the flow of patients in the region – tracking and tracing their presence, availability and mobility– as well as the routes of nurses and physicians through the region. Different movements and rhythms are at stake,e.g. the transforming needs of patients, the movement and coordination of care workers, the short time frames of a crisis admission, and the politics of establishing regional inter-organizational cooperation.
In this article, we use the concept of choreography used by Cussins (1998) and Law (2010) to point out the arrangements and distribution of data and actors in space and time and how these are actively brought together in everyday practice, often in rather conflictiousways.We furthermore explore how gaining access to patient data and replacing care to certain locations, buildings or rooms requires overcoming potential material barriers and complying with authorizations and ideas on chronic care (Bister, 2018;Oldenhof et al, 2016).The metaphor of choreography furthermoreuncoversthe effort and time that goes into assembling these different rhythms and organizational routines.The analysis is grounded in ethnographic observations of so-called ‘region nurses’ in the Netherlands, as part of a broader project on the regionalization of care for older persons.

479. TO CREATE BETTER WORLDS: CARE FOR BIRDS LIVING NOW OR CARE FOR DATA SERVING FUTURE?

Selen Eren (University of Groningen) Anne Beaulieu (University of Groningen)

In this presentation, we will discuss what it means to study bird conservation science as ambivalent care practices and what can be learned from it. More specifically, we will delve into how scientists negotiate between care for individual birds living now and care for data serving future populations. Our ethnographic data shows how more-than-human care practices enable, strengthen, complicate, and even damage knowledge production processes of conservation science. As Puig de la Bellacasa (2017) warns us, the equation is not as simple and straightforward as the following: if only we care more, our knowledge will be “truer”.
Apart from the epistemic role that care practices play in knowledge production processes, we observed how such practices are shaped by both standardized protocols, and scientists’ “sense of the field” fed by immediate and future needs of birds and of knowledge infrastructures (Edwards, 2010). Similarly, care that the ethnographer brings to this field and how that care is shaped prove to have an epistemic value as well. Hence, in this presentation, we will also address how to study conservation science with care (Martin et al., 2015; Lindén and Lydahl, 2021).
Based on our fieldwork, we argue that analyzing conservation science as care(less) practices first and foremost highlights the epistemic value of hidden, underappreciated, and even supposedly inappropriate, affective and attentive more-than-human engagements. Moreover, such an analysis can help conservation science to be more reflexive and credible (Shapin, 1995; Alagona, 2008) as it also foregrounds how the cost of care(less) practices are distributed both across actors and over time.

941. DATA CRISIS: AN ETHNOGRAPHY OF TECHNICAL CARE PRACTICES OF/WITH PANDEMIC DATA IN SPAIN

Clara Fernández de Bobadilla (Universidad Complutense de Madrid)

The central concern of this paper is the technical practices of care from/with data. It investigates this topic based on ethnographic research on the circulation of COVID19 pandemic data in Spain.
This research shows that, in Spain, health and epidemiological data from COVID19 have been decisive in representing the pandemic and making the virus and its effects "visible" in our society, as well as in making political decisions and justifying them to citizens. Data have become a key element in the epistemic diagnosis and policy decisions made during the pandemic.
However, this centrality of data has sparked a great deal of controversy surrounding data and its production and has made explicit major limitations of its infrastructure and technical maintenance practices. Public institutions have encountered major technical limitations, generating data that are dispersed among the different administrations and unharmonized, with production, classification and publication criteria varying among the different regions. Health professionals have found themselves with a large gap between the work of health care and the work of data collection and public health. The public has been left without the necessary resources to make informed day-to-day decisions or to carry out a public audit of the management of the pandemic, giving rise to individuals and groups who have taken it upon themselves to carry out the work of the public health authorities.
This paper takes empirical research data to question 1) what does it mean to maintain or care for COVID19 pandemic data for some of its main actors (healthcare personnel, epidemiologists, administrations, and data activists, among them); 2) what are the practices by which they care for, maintain and produce the data 3) what are the consequences or effects these practices have on the data and on those who exercise them.

0742. DATA CARE IN EDUCATION: CHANCES AND DARK SIDES

Juliane Jarke (Centre for Media, Communication and Information Research (ZeMKI) & Institute for Information Management (ifib) at the University of Bremen) Zakharova Irina (Centre for Media, Communication and Information Research (ZeMKI) & Institute for Information Management (ifib) at the University of Bremen)

Data work is increasingly often considered as care work (e.g. Kaziunas et al. 2017). While data work as care work is receiving analytical attention in research domains such as health care (e.g. Coopmans & McNamara 2020), research on data care in other societal domains such as education is still emerging. Particularly in the educational domain, however, the balance between care and other data-related work, i.e. assessment, accountability, or quality assurance is subtle. Current research on the role of digital data in education suggests that ongoing datafication processes—the increasing translation of every aspect of the social life into data—disturbs the existing balances between care work and other practices in different ways. For example, on the one hand, teachers become concerned with and care about moving students 'up the box' as their data representations in educational statistics (e.g. Hardy & Lewis 2018; Neumann 2019). On the other hand, some educators find new possibilities

for 'knowing their (datafied) students' differently (Selwyn et al. 2021) as they conceive of students' data as a conversation starter required to bring up certain pedagogical and other education-related issues.
Taking this research on datafication in education as a starting point, this contribution seeks to flesh out the ambivalences of data care drawing on an empirical study in German schools, including qualitative interviews with school administrators and teachers. We understand ‘care’ as a practice (Mol 2008) and an ethico-political obligation (Puig de la Bellacasa 2017) and expand on the notion of the “dark sides” of (data) care (e.g. Martin et al. 2015). Doing so, we outline how educational actors’ various caring obligations are translated differently in data work and how juggling between diverging and sometimes opposing caring obligations—e.g. caring for students and caring for data—produces ambivalences in care work.

Room N113 - Panel 043. FUTURES OF ARTIFICIAL INTELLIGENCE IN MEDICAL IMAGING

Flora Lysen (Maastricht University)
Jojanneke Drogt (Universiteit Utrecht)
Mirjam Pot (Universität Vienna)
Paul Trauttmansdorff (Universität Vienna)

The introduction of AI in health care has generated speculation on the futures of "deep medicine," including hyperbolic media reports on imminent "algorithmic doctors" or "robot radiologists." Additionally, AI has become a prominent issue in policy discourses, which steer the direction (and funding) of AI developments in medicine. The field of medical imaging (specifically radiology and pathology) is often positioned as an exemplary domain for the advantageous deployment of AI applications in medical diagnosis and prognosis. Recently, STS researchers have started to pay careful attention to the specific contexts and infrastructures in which these emerging technologies are envisioned, developed, justified and used. Yet, more research is urgently needed to better understand the dynamics and effects of (visions of) AI, including machine learning and deep learning, in medical imaging.

We invite contributions that focus on questions regarding AI and automated processes in medical imaging, such as:
• How do medical professionals, policy makers and patients perceive AI and how can we better understand the development of visions of and expectations about AI in medical imaging?
• How does the use of AI in medical imaging impact diagnosis, access to and the provision of care? And how does it reframe, problematize, and visualize disease and disease symptoms?
• What sorts of ethical and political issues are raised by the use of AI in medical imaging? What future promises and imaginaries are inscribed in its applications, and by whom are they designed?
• How does the integration of AI change ways of working and professional relationships between, for example, radiologists, radiology assistants, computer scientists, and hospital managers?
• What sets AI in medical imaging apart from the use of AI in the analysis of other forms of medical data? What does the quantification of visual information mean in terms of medical knowledge generation?
• Computer-aided diagnosis in image-based medicine is not completely new. What can we learn from past efforts to develop and use these technologies?

The range of potential methods to study these questions is vast, and all are welcome in this track. The convenors aim to foster dialogue and potential future collaborations. In addition to the individual presentations, we will identify cross-cutting themes as the basis for discussion during the panels.

Session 1

405. SOCIOTECHNICAL IMAGINARIES OF RADIOLOGICAL AI: RE-INSCRIBING GENDER IN MEDICAL IMAGING

Melanie Goisauf (BBMRI-ERIC) Mónica Cano Abadía (BBMRI-ERIC)

Artificial Intelligence (AI) is seen as a promising innovation in the medical field. The application of AI-based technologies in radiology is expected to improve diagnostic performance by increasing accuracy and simplifying personalized decision-making. These expectations and visions reflect the sociotechnical imaginaries attached to radiological imaging, which carry understandings of social order that are enacted in AI in radiology.
The ethics of AI discourse has mainly addressed expectations and challenges associated with medical AI, in particular bias and black box issues, and various guiding principles have been suggested. Nonetheless, several ethical and societal implications of AI use remain underexplored, and more attention needs to be paid to addressing potential discriminatory effects and injustices. The advancement of these technologies is built on datasets that are constituted by practices of defining, interpreting, categorizing, classifying, labelling, and annotating. These practices impact knowledge-production and intra-act with normative societal categories.
In our contribution, we explore how social categories are inscribed in the sociotechnical imaginaries of radiological AI, and how they are enacted in AI development practices and Ethics of AI. We focus on gender bias to trace how normative categories of sex and gender are reproduced and how this impacts who and what gets in- or excluded from research and development practices. Our analysis builds on a comprehensive literature review, in which we identified the gaps in current research on Ethics of AI concerning gender bias and on an ongoing qualitative study of the ethical and social implications of AI-based cancer imaging solutions, which is part of a larger project that aims to build a federated cancer imaging platform to enhance AI in oncology.

512. COMPUTER AIDED DETECTION (CAD) BASED ON ARTIFICIAL INTELLIGENCE AS A SOLUTION FOR ENDING TUBERCULOSIS: THE FUTURE OF GLOBAL HEALTH?

Julien Onno (Université de Montreal) Faiz Ahmad Khan (University Mc Gill) Pierre-Marie David (Université de Montréal)

Computer Aided Detection softwares based on Artificial intelligence (CAD/AI), combined with Chest X-rays have recently been promoted as an easy fix for a complex problem : «ending Tuberculosis (TB) by 2030» (WHO). Covid-19 has paradoxically been a barrier for TB detection as well as a major catalyst of CAD/AI implementation in African, Asian and Eastern Europe countries. WHO has recommended the use of such imaging devices in 2021 and many partnerships have helped propose benchmark analysis and technologies comparisons to facilitate "market access" for those products. The global Fund has offered major funding through a channel named COVID-19 Response Mechanism (C19RM) for more than 4 billion $, including CAD/AI solutions. "Global health" (Packard, 2016) has hence materialised this vision of «ending TB by 2030» thanks to those new imaging devices based on CAD/AI.
Through an analysis of international recommendations and guidelines about CAD/AI and by mobilizing interviews with regulators, developers and users of these technologies, this paper will present and question the biography and implementation of these new tools in the contexts of global health. We look at them using the lense of "technology health effects model" (Timmermans & Kaufman, 2020) addressing issues such as "design", "development" and "health cultures" embedded in those medical imaging tools, as well as a general reflection on infrastructure of global health linked to those tools (Peckham & Sinha, 2019). In the end, beyond the question of how the future of ending TB makes CAD/AI solutions unavoidable, we will discuss how they affect an emerging vision of decolonizing global health (Büyüm et al., 2020), blurring some of the key issues regarding health equity.

0714. PATIENT PERSPECTIVES AND ROBOT DOCTORS: PROBING PARTICIPATION WITH ARTIFICIAL INTELLIGENCE IN HEALTH CARE

Flora Lysen (Maastricht University) Alexander Kloke (Maastricht University) Emilie Lake Lake (Maastricht University) Pascalle Paumen (Maastricht University) Sally Wyatt (Maastricht University)

(How) can and should patients be informed about - and involved in - the implementation of Artificial Intelligence-supported technologies in health care? This paper presents the outcomes of a 4-month research-based course in which students at Maastricht University studied and designed new ways to learn from patients (linked to the Maastricht University Medical Center and cancer care clinic) about perceptions of - and education about - care practices and AI. We analyse our own experiments with conceptualising and designing material prompts or "probes" to stimulate discussion about AI with patients and we evaluate such elicitation techniques in light of debates about health literacy, data literacy and personalised medicine. Ultimately, we situate our Maastricht experiment in relation to current calls for engagement and collaboration with patients in times of increased attention to AI as well as a broader rhetoric of patient empowerment and patient participation.

970. NORWEGIAN MEN'S PERCEPTIONS OF ARTIFICIAL INTELLIGENCE IN PROSTATE CANCER DIAGNOSTICS

Emilie Hybertsen Lysø (Norwegian University of Science and Technology, Department of Public Health and Nursing)

Prostate cancer (PCa) is the most common type of cancer among Norwegian men. Whilst the number of PCa cases has increased, the mortality of the disease has decreased since the '90s, indicating practices of overdiagnosis and potentially unnecessary treatment of patients. Within the field of medical imaging, new methods are developed to improve diagnostic precision. Artificial intelligence (AI) with machine learning algorithms is being integrated into image-based diagnostic methods and tools, affecting various actors in the diagnostic processes of PCa. However, little is known about how patients envision AI in PCa diagnostics.
Drawing on ten focus groups with 49 men aged 54-84 years, with and without PCa, we aim to explore men's perceptions of AI in PCa diagnostics, and how they trust AI as part of diagnostics. Preliminary results from the interviews suggest that there is a lack of knowledge and understanding about what AI is and its purpose in health care. One of the most prominent themes in the interviews is the human role versus the AI role in validating and communicating results. How men understand and envision AI will have an impact on their trust in the decisions being made in diagnostic settings. In this paper, we will explore how men understand AI as an actor in their diagnostic process and in decision-making processes.

628. CREATING A FUTURE WITH ALGORITHMIC PARTNERS – A PRELIMINARY EXPLORATION OF AND PROPOSAL FOR CONSTITUTIVE FEATURES FOR A 'COOPERATIVE AND COMMUNICATIVE' AI

Arne Sonar (Ethical Innovation Hub (EIH) @ Universität zu Lübeck) Christian Herzog (Ethical Innovation Hub (EIH) @ Universität zu Lübeck)

This contribution aims at advancing a novel conception of ‘cooperative and communicative AI’ by proposing a set of constitutive characteristics. Such a novel concept is necessary, because in medi-cal artificial intelligence, there is a need for concrete perspectives on specific designs that facilitate improved clinical performance due to a synergistic combination of human and technological capa-bilities in terms of a “clinical intelligence” (Matuchansky 2019). However, discourse on medical AI often revolves around warnings about displacing physicians or is limited to conceptualizing AI merely in terms of a highly specialized tool. However, to some extent, particular positions also con-sider the possibility of a proactive degree of influence of technical applications within interaction processes. Such conceptualizations gradually expand the instrumental perspective towards associa-tive (role) attributions perceiving AI, e.g., as a communicator (e.g., Guzman and Lewis 2020).

This contribution presents the results of a systematic literature review of different notions of coop-erative or communicative technology, focusing on an exploratory qualitative analysis of relevant features and characteristics that might constitute a novel conception of "cooperative and commu-nicative AI". It will be shown that the characteristics pertain to, e.g., creating cooperative authority relations related to a communicative “other” or reflecting a cooperative interaction/interactivity related to the information exchange. Contextualized as components for consciously shaping tech-nological futures via ethical application development and implementation, these characteristics might contribute to the debate about ethical AI. A critical reflection of both the characteristics, as well as their utilization as constituents of ethical AI during development will lead to open questions, inviting further discussion.

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Room N110 - Panel 046 GEOGRAPHY OF RESEARCH COLLABORATIONS AND COMMUNITIES

Niki Vermeulen (Science, Technology and Innovation Studies (STIS), University of Edinburgh)
Marion Maisonobe, Géographie-cités (CNRS, EHESS, Paris 1 Univ., Univ. of Paris)
Rodrigo Liscovsky (Science, Technology and Innovation Studies (STIS), University of Edinburgh)
Morgan Meyer (Centre for the Sociology of Innovation (Mines ParisTech, PSL)

We invite papers that address the geography of research collaborations and communities, for a session that aims to take stock of current research on the topic and improve common understanding of the geography of scientific work and its (inter)national relations. This topic is timely, as current societal challenges -such as the inter-related pandemic, biodiversity and climate crises- are global problems which require international collaboration. At the same time, political developments such as Brexit are influencing the dynamics of collaboration across Europe, while global inequalities are asking for more critical approaches to internationalisation of research (Liscovsky, 2021). As such, understanding the ways in which international research collaborations and communities emerge and are maintained over time is key, including the emergence and 'placing' of research fields: how are the practices and discourses of disciplines spatially/geographically grounded (Meyer and Hodgson 2016; Vermeulen, 2018)? Next to an international variety of case studies, we are also especially interested in a variety of methods to understand the geography of research, including interactions between STS and geography and the combination of qualitative and quantitative understandings of collaboration and field formation and the geographical spaces they inhabit and construct (Maisonobe, et. al., 2017).

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0639. THE ROSCOFF MARINE BIOLOGY STATION: A DRIVING RESEARCH SITE IN THE COORDINATION OF MULTI-SCALE NETWORKS

Marion Maisonobe (CNRS) Josselin Tallec (Université Grenoble Alpes) Bastien Bernela (Université de Poitiers)

The framework of Research Excellence policies in France favours the concentration of research funding on a few metropolitan sites. In this framework, metropolitan areas are said to be the main nodes of scientific networks, and small towns are said to be only satellites under the scientific influence of large cities. To discuss this view, we offer to examine the scientific influence of a small town: Roscoff (3,500 inhabitants located in the Brittany region), home to one of the oldest research laboratories in marine biology (created in 1872 and now employing nearly 300 researchers). Two scientific fields are present there: marine biology (through the study of macroalgae) and marine ecology (including the study of plankton and its relationship to marine ecosystems).
We show that the scientific research of the Roscoff marine biology station is embedded in different geographical scales and scientific worlds. In order to highlight the station's "places" in different scholarly communities and at different scales, we adopt a methodology combining fieldwork and spatial scientometrics. For the national level, we use data from the ANR and CNRS contract databases (indexing scientific projects), and for the European and international levels, publication data from the Web of Science.
These data are geographically processed to allow spatialization and mapping using the NETSCITY web application. Interviews with researchers at the station in 2020 and 2021 and focusses on scientists' trajectories enrich the observations made from scientometric data. Our research highlights the mechanisms, networks and trajectories that enable this small town to occupy an important and key position on the national and international maps of research in marine biology and ecology. This work allows to highlight not "a geography" of the research station's collaborations, but multiple "geographies", specific to the different fields of knowledge and different scholarly communities linked to the research station.

0778. ALGAL CULTURES: CHOREOGRAPHIES OF SCOTTISH SEAWEED

Niki Vermeulen (Science, Technology and Innovation Studies (STIS), University of Edinburgh) Rob Smith Science, Technology and Innovation Studies (STIS), University of Edinburgh)

Scotland is surrounded by seaweed. Historically, the algae growing in the country's cool intertidal waters have provided humans with food, fertiliser, dye and medicine. Most Scots no longer eat seaweed but we are currently seeing a renewed interest. Continuous artistic and scientific engagements with seaweed are being supplemented with new exclusive and small-scale companies producing seaweed seasoning, crisps, cosmetics, supplements as well as kelp-infused gins and whiskies. Others are locating seaweeds in climatic terms, proposing them as a way to offset emissions produced on land. These, and other, larger-scale industrial uses are being proposed as a way of revitalising Scotland's coastal economies, but some of these proposals have already given rise to public controversies, highlighting familiar tensions between nature's preservation and use. In this talk, we trace the choreographies of seaweed, its spatial and temporal movements through Scotland and beyond. We document

Scotland's 'algal cultures' — the historic use of seaweed and its place in artisan, artistic and scientific practices — and map the contemporary R&D landscape and seaweed's place within local and (inter)national policy environments. By conceptualising seaweed as a bio-object, we draw attention to this organism as a boundary crawler, inhabiting the intertidal zone while traversing different sectors, and with the potential to draw them into conversation with each other. As such, seaweed allows us to unpick the politics of different futures, pluralising terms like 'the circular economy' and making it possible to interrogate the connections between scale, sustainability and coastal communities' climatic resilience.

0620. EPIGENETICS IN MENTAL HEALTH RESEARCH: EMERGING CULTURES OF COLLABORATION AND THE POLITICS OF DEMARCATION

Georgia Samaras (STS Department, Technical University of Munich, TUM School School of Social Sciences and Technology) Ruth Müller (STS Department, Technical University of Munich, TUM School School of Social Sciences and Technology)

Mental health conditions represent one of the most significant burdens on the world as cases of severe depression and anxiety are rising. Treatment options, however, remain limited (Kessler et al., 2009). Against this background, researchers promote environmental epigenetics as providing promising molecular responses by improving the knowledge on and treatment of mental health conditions. By conceptually reconciling the nature/nurture dichotomy, STS scholars widely discuss epigenetics as allowing for interdisciplinary research between biomedicine and the social sciences (e.g., Meloni et al. 2016). However, less research has been done on how epigenetics is affecting interdisciplinary dynamics within biomedicine itself. In our paper we therefore offer a close analysis of how different domains of knowledge are being remapped and converged within the mental health research landscape and which challenges emerge as a result. Through discourse analysis of scientific publications and qualitative interviews with key researchers, we analysis how the "placing" of epigenetics (Meyer and Hodgson 2016; Vermeulen, 2018) leads to interdisciplinary collaboration on the one hand, and territorial attitudes on the other hand. To that end, we first trace how epigenetics moves from the periphery to the centre of research in psychiatry, both in basic research with model organisms and in clinical research with human material. Second, we demonstrate how epigenetics enables international and interdisciplinary connections between these two domains of knowledge, serving as an arena for synthesizing knowledge claims. Third, contrasting this emerging culture of collaborating, we identify tensions materialising what we propose as "politics of demarcation" between basic and clinical researchers: how should epigenetics be appropriately researched and interpreted as a novel body of knowledge to become clinically meaningful and to lend credibility to psychiatric research? With our paper, we therefore contribute to STS literature aimed at exploring how research collaborations and communities converge with emerging forms of knowledge.

050. DISENTANGLING THE LOCAL CONTEXT – IMAGINED COMMUNITIES AND RESEARCH INTEGRITY POLICIES

Serge P.J.M. Horbach (Aarhus University) Mads P. Sørensen (Aarhus University)

With research becoming increasingly international while at the same time still embedded in geographically specific institutions, the concept of the relevant context for implementing research policies becomes blurred. There is still consensus about the importance of aligning policies to the local context for a successful implementation, but there seems to lack a systematic reflection on what the local context means in contemporary research.
Taking research integrity (RI) policies as a case study, we set out to examine how we can understand the relevant local context in contemporary research. We argue that although we have to consider institutional and national characteristics when implementing RI policies, disciplinary or epistemic communities are equally important. These communities are not bound to organizational models, geographical localities, or physical places. Instead, they cut across time and space – and are formed by historical and transnational research practices.
We propose a conceptual framework for understanding researchers' local context relating to RI policies. Studying the formation of 'local communities' in science, we aim to carve out the relevant dimensions that characterize such communities, building on Beck's work on cosmopolitanism, Durkheim's theory of solidarity and other relevant theories. Combining these frames, we argue that researchers' imagined communities (Anderson) are the most relevant way to understand locality.
Subsequently, we examine this model with data from the International Research Integrity Survey (IRIS) carried out in the SOPs4RI project among more than 65,000 researchers. The survey asked participants about their perception of local context and researcher identity. The results indicate an entanglement of belonging to both geographical or institutional locality as well as epistemic and infrastructural locality, with an emphasis on the latter, but with disciplinary and national variations.

688. ALWAYS SOMEWHERE, BUT NOT JUST ANYWHERE. ON THE POLITICS OF SPATIAL APPROACHES IN ST(I)S.

Jorrit Smit (Erasmus University Rotterdam)

Place matters in science, technology and innovation – even after the surge of information technologies promised to dissolve distance. Historically, different geographical and architectural concepts, metaphors and models have been used by historians, STS and innovation scholars to capture the different ways in which research is intricately spatial. In most cases, this implied a criticism of the 'modern' placeless view of science, suggesting a situated and contextualized understanding of scientific practices in its place. Still, the focus in this literature tends to be limited to 'scientific boundaries' (communication between dispersed specialists) or, in innovation studies, scientific practices get reified into commodifiable knowledge. At the same time, the political economy of different spatialities of research often remains underemphasized. In this reflective paper, I will probe the potential of different spatial STIS approaches to bring into view the politics of (policies for) relations between scientific and societal practices. What does the where of scientific research tell us about its usefulness? I approach this question by situating concepts from history of science, STS and innovation studies that emerged towards the end of the twentieth century. After touching upon the 'spatial turn' that rediscovered the construction of knowledge in specific locales, I move to the attention for circulation, travel and transfer of science as shown both in actor-network theory, history of science and anthropology. The topological approach of John Law & Annemarie Mol appears as a synthesis of these developments. Around the same time, while clusters of science and industry spread over the globe, a 'proximity school' emerged that took seriously the geography of innovation. And since the turn of the century, the ecological concept of ecosystem has become prominent in science and innovation policy. This analytic overview will prompt, in turn, a reflexive debate about the political economy of geographical approaches in STS.

Room N117 - Panel 048 TRANSDISCIPLINARY RESEARCH: HOW TO STAY WITH THE TROUBLE AND ENABLE CO-LEARNING?

Selen Eren (University of Groningen)
Anne Beaulieu (University of Groningen)
David Ribes (University of Washington)
Nienke van Pijkeren (Erasmus University Rotterdam)

Having societal relevance and social impact is increasingly becoming relevant evaluation criteria for STS researchers, just like for researchers in other fields. More and more, researchers are expected not only to understand the phenomena they study, but also to contribute to the stakeholders around/of that phenomena. STS researchers' projects are often funded directly by those stakeholders themselves, expecting clear 'recommendations' or contributions from research outcomes. In other cases, the drive for (social) impact come from researchers themselves, especially when they think that STS insights can be particularly relevant and useful for a specific public discussion, like in the corona truth wars (Harambam, 2020).

At the same time, both proponents of interventionist STS approaches (Zuiderent-Jerak & Jensen 2007; Zuiderent-Jerak, 2016) and critics of value-driven transition management (Shove & Walker, 2007) are cautious about the limited agency, predictability, and/or legitimacy of researchers who are expected to monitor/map out the phenomena, diagnose the bottlenecks, and orient/facilitate the stakeholders to achieve the desired change. Accordingly, transdisciplinary research as an approach is not a simple bridge connecting society and relevant academic research with a smooth one-way road from the latter to the former (Hahn, Hoffman, et al. 2018). Rather we imagine it as a space that is at times productive or uncomfortable, where participants feel frictions, need to negotiate, and hopefully co-learn, mostly without knowing where the process will eventually lead them.

We are inviting papers that reflect on the everyday politics and practices of transdisciplinary research and that can contribute to supporting each other in this journey. The questions we are interested in include, but are not limited to, the following:
- How is transdisciplinary research enacted in practice and how does it differ from how it is imagined?
- What is the skill set needed to enact it as imagined?
- How is it played out in various contexts, what gets in the way, and what can we learn from each other?
- How does translation work between researcher(s) and stakeholders takes place; how are knowledge(s) and truth(s) negotiated?
- What might be some low-hanging fruits in this kind of work?
- How do small-scale contributions (also) matter?
- How to design the collaborations to manage uncomfortable expectations, and care for vulnerable positions in which researchers and stakeholders can easily find themselves?
- How to square the uncertainty of the method with the expectations of meaningful contributions from each side?
- What are moments of friction and what are the mechanisms to work with them?
- What are the benefits and pitfalls of interventionist approaches and how are they distributed across actors?

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1028. AI ETHICS: MAKING TRANSDISCIPLINARY PROBLEMS

Tjitske Holtrop (CWTS, Leiden University) David Moats (Center for Consumer Society Research, University of Helsinki) Judit Varga (CWTS, Leiden University)

It has increasingly been understood that attempts to make artificial intelligence or autonomous systems 'fair', 'accountable' or 'transparent' will require transdisciplinary collaborations that include disciplines ranging from computer science and engineering to humanities and social science, in addition to users and topic experts in various domains. Yet within this growing research field, sometimes referred to as "AI Ethics", it has frequently been noted that these key terms, like 'fairness' or 'bias' or 'discrimination' have different uses for different academic disciplines (Binns, 2018; Narayanan, 2019) as well as for non-academic communities.
This paper is about the efforts of a transdisciplinary group - including our research team consisting of anthropologists, STS scholars, scientometricians, and AI ethics scholars - to map these different uses (following Mulligan et al. 2019). We used scientometrics to visualize divergent uses of key words in a database of scientific abstracts and employed the resulting visualizations to facilitate discussions around the difference and sameness between communities within this transdisciplinary space. We organized several workshops with "stakeholders", and, moreover, had many internal discussions trying to make sense of our strategies and outcomes. Throughout the whole process, contrasts between stakeholders seemed difficult to grasp or pinpoint.
In this paper, we reflect on what we learned about transdisciplinarity from our own strategies to grasp it (Seaver, 2017). We will focus on a few key moments in the development of our project where frictions between ways of

knowing resulted in a re-definition of our research question and new directions for research. Transdisciplinary research, we argue, is not hindered by divergent forms of knowing and doing but rather only proceeds through making these differences visible. (Maniglier, 2019; Gad and Jensen, 2016). Building on these realizations, we offer the resulting visualizations and workshop exercise as a provocation to stimulate transdisciplinary research in uncertain intellectual terrain.

795. KALEIDOSCOPIC INTEGRATION: KNOWLEDGE INCLUSION IN VACCINATION GUIDELINE DEVELOPMENT

Lea Lösch (Vrije Universiteit Amsterdam) Willemine Willems (Vrije Universiteit Amsterdam) Teun Zuiderent-Jerak (Vrije Universiteit Amsterdam)

One of the motivations for doing transdisciplinary research is the aim to combine and leverage different knowledges. Though a laudable aim, this inevitably raises the question of how to integrate different knowledges, that may well be incommensurable or otherwise kept apart for good reasons. Given that this is surely not a matter of combining different pieces of a puzzle that “reveal different aspects of the same underlying world” (Szerszynski & Galaragga, 2013, p. 2817) a summative logic (‘adding up’ knowledges) may do more harm than good.
As part of a project on including experiential knowledge and value considerations of citizens, patients and health professionals in clinical practice guidelines, we explore ways to integrate knowledge without ignoring their fundamental differences. We particularly explore the concept of “kaleidoscopic integration” (Rip 1999), which is a form of integration that maintains “antagonisms and outlyers”, to see how this may help us to make different knowledges count on their own terms.
Our plan: to use our ethnographic observations of guideline development meetings to make guideline group members aware of the different types of reasonings and knowledge repertoires they utilize (Moreira 2005) and how this helps them achieve successful and meaningful integration of different types of knowledge. This way we hoped to open up their epistemic practices to more of the knowledges we were sourcing (through digital methods of online discussions), allowing us to practice further kaleidoscopic integration.
We soon realised that the more explicit we made the different types of reasoning at play, the less space and open-mindedness there seemed to be for kaleidoscopic integration. This raises challenges for how we may best achieve kaleidoscopic integration, as well as for transdisciplinary work that assumes their clever descriptions may be helpful as interventions.

855. DEALING WITH COMPLEXITIES AND SIMPLIFICATIONS IN A TRANSDISCIPLINARY RESEARCH PROJECT

Zofia Boni (Adam Mickiewicz University in Poznan) Franciszek Chwałczyk (Adam Mickiewicz University in Poznan)

This paper studies the complexities (Mol and Law 2002) involved in developing and implementing a research project about climate change and urban heat. Embodying Climate Change: Transdisciplinary Research o Urban Overheating (EmCliC) brings together physicists, sociologists, economists, environmental and climate scientists, environmental engineers, cultural studies scholars and social anthropologists. The project aims to understand (1) how climate change and urban overheating have been impacting vulnerable groups and (2) older adults’ embodied and socially situated experiences of heat in two European locations, Warsaw and Madrid. It also aims to develop a transdisciplinary methodology. While the subjects of our research are adults over 65 years old, the project is organized around studying several ‘objects’: heat, vulnerability, adaptation, embodiment and climate change.
We have not yet settled on our understanding of these ‘objects’. We move between analysing them as ‘boundry objects’ (Star and Griesemer 1989; Star 2010), studying various interpretations of these objects and convergences and divergences between them (Nightingale 2016); and thinking about them as multiple ‘objects’ (Law and Singleton 2005). This remains to be a crucial part of our transdisciplinary process. The paper reflects on our collaboration and the process of co-learning; on how data is being created, negotiated, synthesized, simplified and analysed. It discusses what sort of challenges and frictions we have encountered, related for instance to hierarchies of knowledge, methodological reductionism, scalability, data gathering and collaborative analysis; and how have we dealt (or not) with them. The project is ongoing, so the paper is meant as a reflection on and experimental intervention into this ongoing process. Finally, the paper questions whether it is possible to move from truly interdisciplinary research to transdisciplinary research in the lifespan of a 3-year project, and in the broader context of fast pace, neoliberalised, bureaucratised, metrics-driven academia.

744. ENGAGING NON-WESTERN METHODOLOGIES IN EUROPEAN TRANSDISCIPLINARY PROJECT RELATING TO THE PROBLEMS OF THE CLIMATE CRISIS

Oliwia Olesiejuk (Adam Mickiewicz University, Poznan, Poland)

This paper is devoted to the transdisciplinary research project 'Mississippi. An Anthropocene River, launched in 2019 by Haus der Kulturen der Welt, Max Planck Institute, Anthropocene Working Group, academic and cultural institutions, Indigenous communities, artists, and researchers. Based on the field research along the Mississippi

River, the project incorporates practices and approaches extending European and American models of knowledge production. It is one of the first to use the digital platform for practices that aim to create new methodologies relating to the problems of the climate crisis.
The study is based on the analysis of the digital platform; and in-depth interviews I conducted with representatives variously engaged in the project: Andrea Carlson, an Indigenous artist born in the Grand Portage Ojibwe Indian Reservation; Christoph Rosol, researcher, and curator at HKW and MPI, Nicholas Houde, researcher and co-curator responsible for the conceptual development of the project; Simon Turner and Colin Waters from the AWG, authors of the geological expertise of the Mississippi River. Taking into account the perspectives of different actors: those representing institutions, research groups, and local communities and stakeholders, I show the purposes and the threats of incorporating non-Western epistemic approaches into research; the role of Indigenous communities in setting the project's conceptual framework (Anthropocene, 'Field Stations', research stations); ways of presenting data on digital platforms and plans for its development; the benefits for the organizations involved in the project, in terms of research funding, networking of international partners among cultural and scientific institutions, the inclusion of Indigenous voices in projects.
The study shows the necessity of transdisciplinary research (in remote places and locally) based on concepts created together with local communities, considering in the first place local problems, tradition, and knowledge. It also demonstrates how Western institutions' structural and financial interests can disturb the achievement of these goals.

0694. THE TROUBLES OF DATA MULTIPLE. VISUALISING PATIENT DATA ON A NEUROSURGICAL WARD.

Julia Kurz (Universität Siegen) Cornelius Schubert (Technische Universität Dortmund)

We report from a technology design project in health care that aims to develop new cooperative-diagnostic visualizations of patient data. Neurosurgeons, Computer Graphics Scientists and STS researchers collaborate to develop a prototype application in a hybrid combination of bottom-up and top-down approaches of visualization design.
Despite of a shared goal – the development of the prototype – during the collaboration it turned out that three distinct agendas persist. Though all involved practitioners and researchers work on patient data collaboratively, they approach it with different methods, tools, and concepts that correspond to their own disciplinary practices. E.g., speaking about muscle strength has different meanings for the three disciplines: Computer graphics scientists speak about muscle strength’s quantifiability combined with the correspondent degree of visually discriminability. Neurosurgeons speak about its intensity and its duration in combination with the credibility of the patient. STS scholars speak about different documentation habits for muscle strength and impacts of them for cooperation within the neurosurgeons.
In transdisciplinary communications, such clear-cut differentiations between the social worlds were not immediately obvious. We needed a sharpening of differences between us to recognize that there are different approaches to the patient data in the background when talking about the apparently same thing. To grasp it in a more conceptual manner: To benefit from transdisciplinary collaboration – at least in our context – the challenge was first, to identify data multiples (cf. Mol), and second, to negotiate them: which layers of the data multiples will be represented in the prototype?
In the talk we will present our approach of aligning the data multiples and not conceal the price all the collaborators had to pay. We would like to discuss with the audience how an adequate equilibrium between collaborators can be reached – and if an equilibrium is an adequate aim at all.

Room N111 - Panel 056. BRINGING STS UP TO SPEED? THE DIGITAL AS PRACTICE

Roos Hopman (Museum für Naturkunde)
Tahani Nadim (Museum für Naturkunde)
Ingmar Lippert (Museum für Naturkunde)

Whereas the “digital” has become a habitual term in STS, to “digitize” remains relatively absent. This discrepancy hints at a disparity in analytical attention for digital (data) forms on the one hand, and their production on the other.

Presented as essential to “progress”, different forms of digitization (of objects, information, processes) are currently undertaken in fields ranging from transportation and policing to museum collections. Mobilizing discourses of optimization and acceleration, digitization is presented as a necessary speeding up of and keeping up with rapidly changing technologies and societies (Wajcman and Dodd 2016). Furthermore, digitization is tied up with the notion of “transformation” and thus suggests a break from the past.

In this panel we seek to bring digitization, practices of “making digital”, into the spotlight. Aware that digitization may take on highly diverse forms, we want to bring into conversation practices from a wide variety of fields. Seeking to learn what is at stake in digitization, we invite in particular contributions that critically examine its entanglements with speed and temporality. For if digitization is a means of speeding up, what kinds of futures are we racing towards? And what are we attempting to leave behind? What do we seemingly risk to lose lest we cannot keep up? With this panel, we aim to explore how STS can help understand the digital as practice.

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870. DIGITIZING HERITAGE: MUCH MORE THAN CLICKING ON A BUTTON, PRODUCING GOOD COPIES

(Mylène Tanferri; University of Lausanne - Switzerland)

Based on the extensive ethnographic fieldwork in Brazilian Heritage institutions realized for my PhD, this proposition provides other means to study digitization as a social phenomenon, focusing not on its results but on its situated processes: as “digitization in action” reformulating the iconic latourian proposition (Latour, 1995). The general aim of this shift is, as simple as it might be seen, to deploy what happens in between the material artefacts and their digital copies and to show that digitization is far from instantaneous. It involves reframing and redefinitions not only of the artefacts and documents but also of the machines and their operators. By looking at digitization in action, we can uncover specific, local transformations that are crucial to understand what digitization is doing to heritage and conversely.
When explored with a fine grained attention for the participant's work, we can see that digitization involves several important steps : the transportation and installation of the digitizing machines; realizing tests and devising procedures to bring all the different parts into proper alignement; and finding solutions for emergent problems in the digitization process. In these steps, a central concern for the participants revolve around the definition of what a good copy consists of and how it is to be produced and evaluated. In this definition, visually qualifying the copies is crucial and relies on the situated ressources available at hand. For this presentation, we will follow three digitizing operators in one setting, and I will show that each one has devised its own way of producing and looking at copies to verify them, placing several elements at the core of this assessment. In the production of a visually assessable quality that can stand outside its production context, away from the original documents, these operators reframe what heritage is along the way.

140. DATA CONVERSATIONS: PERFORMING DIGITIZATION DIFFERENTLY

Kat Jungnickel (Goldsmiths, University of London) Julien McHardy (COPIM, Coventry University & University of St Gallen)

One allure of digitisation is jumping almost instantly between scales, datasets and time points. The experience of (time)travelling at speed and low cost is thrilling. Still, like in most experiences of speed, the rush is made possible by labour, energy and infrastructure that remains largely invisible. In a reversal of the panels’ focus, and via an interventionist mode, we travel through an established dataset containing 200 years of global clothing patents, spanning 1820 to 2020. Our practical interventions into the dataset slow down and mess with the assumptions and premises of effortless, speedy and almost dematerialised data practices.
In a kind of reverse engineering, we query the dataset to experiment with how we can perform this data differently. We work with slow practices of ‘making digital’ to inspire multi-dimensional conversations, renderings and readings of the material at hand. To do this, we frame our practice in line with feminist technoscience, critical data

and citizenship studies (Sheller 2012; Haraway 2016; D'Ignazio & Klein 2020) who draw attention to alternate practices for carefully piecing together fragments of lesser-known stories, lives and happenings.
In this session, we present our entangled collaboration. Kat and her ERC funded Politics of Patents (POP) team approach this data with thread and needle in hand, sewing, cutting and wearing historical inventions, stitching analysis, archival stories and clothing items at once. In the Experimental Publishing group, Julien makes books as experiential spaces that can hold and mediate multiple digital positions. Together, we explore how digitised data comes to life and becomes available for alternate ways of knowing, being and togetherness. In short, we attempt to perform data differently, approach the digital data as a lively gathering, and share it via sensory, interactive, multi-dimensional means while also moving towards forms of publication that can hold such work.

992. ADVOCACY AFTER FORMOSA: CIVIC DATA, LAW AND DIGITAL ARCHIVING

Tim Schütz (University of California, Irvine)

STS research in diverse communities near petrochemical plants has emphasized the importance of “civic data” (Wiley et al. 2017) — i.e. data that is freely available and organized to be useful in characterizing and addressing environmental health problems. Work to move beyond environmental injustice is multi-faceted and extensive in time. Legal actions to address environmental injustice cases are critical, but are best seen as flashpoints – with deep work ahead and behind them, at multiple scales. Across settings, there are important data gaps but also large amounts of data collected by activists over years of work. Often this data is stored in activists’ homes in analog form, inaccessible to others working on related issues. As activists begin to digitize their records for advocacy campaigns and public repositories, this raises questions about the need for civic data infrastructure, and how such infrastructure should be designed, governed, and sustained going forward. This paper explores the civic data ideologies, practices, and infrastructures of environmental activists in Texas, Louisiana, Taiwan, and Vietnam that are organizing against Formosa Plastics, one of the world’s largest petrochemical companies. The analysis will focus on how the digitization and transnational sharing of legal documents is shaped by the temporalities of lawsuits (from clean water citizen suits to toxic tort cases) but also new forms and emerging ideals of civic knowledge demonstrated by contemporary plastics activists. Drawing on the development of the Formosa Plastics Global Archive, the talk will open a discussion of how STS researchers keep up with increasingly complex problems and speed of digitization to support enhanced collaboration both among researchers and with the communities they study.

0690. UNSTABLE PROJECTIONS: TRACING COMPUTER VISION IN THE FIELD OF SECURITY THROUGH TIME-BASED DIAGRAMMING

Ildikó Plájás (Leiden University) Ruben van de Ven (Leiden University)

In this paper we propose a time-based digital tool, a diagram-in-the-making as to learn about computer vision in the field of security. Computer vision --as a means of understanding faces/bodies/movements through digits-- is a digitization practice par excellence. We examine the proliferation of these technologies, including their wide reaching consequences and politics, by attending to their embeddedness in various fields. We conduct qualitative interviews with professionals who develop or use these technologies and ask them to draw a diagram of the entities they mention (e.g. companies, databases, technologies) and the relations between them. We do not just capture the finished drawing, but record the process of its making. The time-based unfolding of the lines enacts imaginaries of computer vision practices which are intrinsically intertwined with the narratives of which they are part. Rather than forming a coherent whole, the diagrams embrace an unstable projection. They are always in the making, always processual (Kitchin and Dodge 2007). The collection of diagrams allows for a practice of combination and composition (O'Sullivan 2016), providing space for convergences and contradictions between the various field and imaginaries of our research subject. Computer vision therefore emerges as an ontological multiple (Mol 2002). In our paper we argue that to better understand computer vision, instead of taking its different elements (such as databases, algorithms, etc.) as given, we should attend to both the practices that we observe and the method through which we do so. By bringing in the temporal dimension of diagramming, we aim to shift attention to digitization as a process, a tracing of entities and drawing of relations, always unfolding, always unfinished.

Room N112 - Panel 060. BIG DATA AND THE POLICE: INVESTIGATING THE DYSTOPIA

Vasilis Galis (IT University of Copenhagen)
Helene Oppen Ingebrigtsen Gundhus (University of Oslo)
Anu Masso (Tallinn University of Technology)
Emils Kilis (Baltic Studies Centre)
Evie Papada (St Andrews University)

Given the political, social, and economic instability that arose during the latest financial crisis, the negative prognosis for the coming years (World Bank 2019), as well as the issuing of stay-at-home orders/shelter-in-place orders as a response to the COVID19 pandemic, the police have gained increasing attention for their role and militarized tactics to absorb socio-legal turbulences and to maintain order (rua Wall 2018; 2020). In this context of a fragile and instable financial and sociopolitical landscape, law enforcement lies at the fore front of digitalization both in Europe and globally and constitutes perhaps one of the most emblematic public sector institutions going through a significant transformation in the age of Big Data. This panel focuses on how big data, humans and software co-constitute crime, crime solving and/or prediction. We are interested in examining how police officers are using data driven technologies and how their varied usage affects not only crime solving/prevention but also the technologies themselves. The rapid evolution of machine learning, data mining and data analysis, have advanced crime analysis and constituted data technologies an imperative for police work (Ferguson 2017). A number of software packages for data analytics are used by police officers for identifying patterns that indicate future spatial and temporal distributions of crime (Kaufmann et al. 2018). This transformation refers to all police decision-making processes that are driven by data technologies aiming to prioritize specific crimes, hotspots and offender groups (Kaufmann 2018). Predictive policing is by definition aimed at anticipating the future. What does law enforcement mean after digitalization? What values are embedded in digital policing technologies, and how are these negotiated and transformed before and after implementation? How can STS inspired methodologies and conceptual frameworks contribute to studying intelligence-led policing, considering the often non-transparent development and implementation of digital police technologies? In this panel, we aim to include a diverse set of ideas, approaches, and methods to problematize how social and cultural values, bias, and legal adjustments are conceived and embedded in data-driven police innovations, as well as experienced, negotiated and practiced by citizens, law makers, police officers and developers.

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661. PREDICTION, POWER AND VALUES IN DIGITALIZED POLICING IN DENMARK

Björn Karlsson (IT University of Copenhagen)

As Brayne (2021) notes, predictive systems of law enforcement are not value-neutral objects but contain messy, complicated relations of power. To investigate how social relations are inscribed in technological policing systems which attempt to forecast or predict the future, in a northern European context, the Critical Understanding of Predictive Policing (CUPP) project was initiated. In the context of Denmark, we ask ourselves, what values and affordances are embedded in the POL-INTEL program of the Danish police, made and delivered by Palantir Technologies? To attempt to open the black box is particularly fraught with methodological issues as police consistently in Denmark (Holmberg, 2014) and internationally (Ralph, 2017) carefully manage, contain and frame information. Due to this factor there is a range of ideologies (Althusser, 1970) which proliferate concerning technology and policing, both in academia and in civil society.
To counter this, attempts are made from a multi-disciplinary approach to utilize ethnographic fieldwork such as interviews and observations with police officials, Palantir employees and others, along with wide-ranging document analysis. This investigation leads to questions examining potential bias, changing police work practices and state power. It furthermore critically examines the concept of prediction and it's genealogy and returns to fundamental questions of policing and the liberal state.
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372. THE PROMISING FUTURE OF BIG DATA IN CRIME PREDICTIONS: EXPLORING TECHNO-OPTIMISM AND ITS SOCIAL CONSEQUENCES

Laura Neiva (Communication and Society Research Centre (CECS), Institute for Social Sciences (ICS), University of Minho, Braga, Portugal)

Big Data technologies are usually described as objective and efficient in predicting crime and identifying criminals. Their expansion is promoted by techno-optimistic discourses that reflect the high expectations attributed to technologies to solve crime problems. In this presentation, drawing inspiration from social studies of science and technology, I explore the sociotechnical representations of Big Data. Through documentary analysis, based on political discourses, legislation, and scientific literature in the ICT field, I reflect upon how this technology has been framed by imaginaries that attribute it a “technological identity” of innovation and effectiveness. Simultaneously, how the understanding of Big Data as “promissory entities” is obliterating the social and historical contexts in which this technology emerges. The techno-optimism about Big Data that characterizes this technology’s futurist culture narrow the debate around the criminalization practices historically associated with the technological developments applied to the police and criminal justice field. Namely: (i) the potential for discrimination and racism; and (ii) the expansion of surveillance of vulnerable communities. Given the performativity of the future visions surrounding Big Data in the criminal field, with the power to shape its innovations pathways, I explore the social, cultural, and historical consequences of using this technology to inform criminal predictions.

0829. THE DATAFICATION AND PLATFORMIZATION OF POLICING IN GERMANY

Simon Egbert (Bielefeld University)

With the implementation of predictive policing, the police in Germany have entered the algorithmic age. The associated hype has led to political and police decision-makers being sensitized to the (propagated) potentials of big data analyses. This in turn has led to the launch of numerous projects and programs that aim to promote the holistic datafication of the police, such as the restructuring program "Police 2020" or the introduction of data analysis platforms like "hessenDATA" (Hesse), "DAR" (North Rhine-Westphalia) and "VeRA" (Bavaria), all based on the software Gotham from Palantir Technologies.
In my paper, I will discuss this connection between the hype around predictive policing and the advent of data analysis platforms, arguing that currently a datafication and platformization of policing is observable in Germany. I will also present the transformational effects which are associated with this datafication and platformization for police knowledge, police activity and the police as organization in general.

1030. PREDICTING CRIME: STANDARDIZATION, DISCRETION AND DIGITAL TOOLS

Helene O. I. Gundhus (University of Oslo)

Drawing on interviews and observation of cases in the Norwegian police the project aims to analyse the practice of predictive policing through the lens of risk assessment tools. Predictive policing is intended to make the police more future-oriented, and to capture the likelihood of risks and future crises. In Norway, risk assessment tools are implemented in several areas and at different levels. In this paper I will approach cases related to prevention of criminality related to youth crime. I will look at what values, politics and affordances are embedded in different risk assessment tools and how this is embedded in the knowledge practices. I will particularly approach how the co-production of the data influence the decision-making processes and discretionary power within the police system and by the individual.

Room N115 - Panel 064. PRODUCING AND DISSEMINATING SCIENTIFIC KNOWLEDGE AT THE AGE OF OPEN SCIENCE

Quentin Dufour (CSI, CNRS, postdoctorate)
Didier Torny (CSI, CNRS, senior researcher)

For many governments (Finland, France, Greece, Netherlands…), transnational and international organizations (Coalition S, European Academies, European Commission, UNESCO…), we have entered the age of open science, conceived as the only way to build sustainable and solid science. Charters, plans, principles, standards and other policies are being produced to define good practices in openness, from writing research projects to disseminating data. Every piece of knowledge is affected by this movement: methods, software and codes, data of all kinds, publications (books as well as articles) must be in line with this new scientific dissemination regime.

However, in practice, these injunctions and norms raise many questions. The aim of this panel is first to tackle the multiple implementations of Open Science within the academic world. What is openness? How academic communities concretely define it, for example is openness for code reducible to preexisting open source software? What are the new and the unchanged practices? What conflicts and controversies do openness entail, following which kind of moral economy? How is dissemination changed in this context? From preprint to open archive going through gold open access, how are publications impacted, whether in terms of writing, format, or economic model and does it go beyond the previous open access movement? From data management plans to the making of FAIR data, how is research production changed? How can closure and limits to sharing be justified and how do they materialise?

Second, beyond its implementation, openness potentially changes existing academic issues and the second aim of the panel is to highlight these transformations. How do academic institutions and researchers envision and perform dissemination to non-academic audiences in an open world, e.g. in cases of major public interest such as the COVID-19 pandemic? How are open archiving and preservation objectives designed, with what infrastructure, and how are they linked to intellectual property issues? How are the problems of misconduct, error, and fraud considered in relation to openness? How are the questions, central to STS, of material contributions and attribution processes in science, disrupted by openness, in particular around embargoes, citability and the rewarding of contributions to open science? The panel welcomes empirical and theoretical works in STS and related social science, as soon as the focus is on open science. We expect contributions about all disciplines, countries, and types of objects, as the literature has shown the diversity of openness practices.

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172. CROWDFUNDING FOR SCIENTIFIC RESEARCH AS PUBLIC ENGAGEMENT?

Chris Hesselbein (Politecnico di Milano)

Open Science initiatives, such as open peer review and crowdfunding, are often seen as necessitated and facilitated by the rise of digital platforms, which have enhanced communication with various publics and increased participation by non-scientists in the production of scientific knowledge and the allocation of resources. The impact of such digital technologies and the relationalities they enact have been welcomed for leading to more diverse, inclusive, and accountable as well as more democratic forms of scientific knowledge production.
This paper focuses on one specific case, namely crowdfunding platforms for scientific research. On such platforms, campaigns seeking funding for research are evaluated, and potentially funded and thus legitimized, by members of the general public. Crowdfunding has been hailed as an important development not only because it offers support for more junior or diverse researchers and for small-scale or high-risk research projects that lack support from conventional granting institutions, but also because crowdfunding offers a novel means of communicating and engaging with diverse publics. These publics are exposed to insightful information about the process of doing research, encouraged to financially contribute to projects that they deem important, and sometimes even prompted to propose projects themselves.
However, a more critical analysis of crowdfunding – based on interviews with scientists who have run campaigns – casts considerable doubt on the purported potential for crowdfunding to democratize scientific research in the future. The central claim that crowdfunding facilitates engagement with and participation by members of the public is undercut by a lack of evidence of dialogue or mutual interaction let alone a shift towards more socially-informed science. These findings underscore that an analytical focus on the actual practices and experiences of crowdfunding is a useful means for problematizing this particular Open Science initiative and thus for evaluating its ‘democratic’ potential in a broader social context.

637. OPEN SCIENCE PARTNERSHIPS’ CONTRIBUTION TO VALUE CREATION AND KNOWLEDGE DISSEMINATION

Irene Ramos-Vielba (The Danish Centre for Studies in Research and Research Policy, Department of Political Science, Aarhus University) Maria-Theresa Norn (The Danish Centre for Studies in Research and Research Policy, Department of Political Science, Aarhus University)

Among the multiple implementations of Open Science within the academic world, a small but growing number of Open Science Partnerships (OSPs) has emerged in recent years. OSPs are a novel form of public-private research collaborations that adhere to principles of openness, including the absence of intellectual property rights. OSPs are typically formed to advance science and to strengthen and accelerate the societal uptake of research outputs, which must be freely shared, without restrictions on their further use.
This paper explores how OSPs may create an environment favourable for generating and de-risking research outputs with a broad range of potential applications in society. By providing funding for open collaborative research, guided by both scientific ideas and insight into needs and challenges in industry, we argue that OSPs may help mitigate some of the well-recognized challenges associated with the diffusion and exploitation of new knowledge and technologies. First, early and ongoing involvement of industry stakeholders in co-creation processes strengthen partnerships and generate a knowledge foundation for accelerated discoveries. Second, knowledge created in an OSP realm results in knowledge spillovers, which support partners in identifying and exploiting new –commercial and non-commercial– opportunities. Third, OSPs reduce organizational and transactional boundaries to knowledge exchange, ultimately mitigating barriers to production, use and dissemination of scientific knowledge
We illustrate our argument through case studies of two OSPs in the biomedical field, the Structural Genomics Consortium and the Open Discovery Innovation Network. Their open collaborative processes generate cross-fertilization of knowledge and technologies, in terms of both high-quality reproducible academic science and in-house R&D firm capacity. This model drives open, collective problem-solving knowledge that can act as the building blocks for innovation downstream – e.g. for drug and treatment development for the benefit of patients. OSPs can also represent a new pathway to commercialization and academic entrepreneurship.

290. MAKING SCIENCE PUBLIC BY LEARNED SOCIETIES

Elina Late (Federation for Finnish Learned Societies) Janne Pölönen (Federation for Finnish Learned Socities) Elina Pylvänäinen (Federation for Finnish Learned Societies)

Learned societies are organisations that bring together scholars and citizen scientists interested in the same topics across institutional and geographical boundaries. These societies are also referred to as scholarly/scientific societies/associations. One of the central tasks for the societies is to disseminate scientific knowledge by publishing journals, arranging conferences and providing education, not just for scholars but for professional and amateur audiences as well. However, the future role of the societies has been questioned when journals are switching to open access and junior scholars are less eager to engage with society work that is often based on voluntary. The aim of this paper is to study the ways learned societies make science public and discuss their role in enabling societal impact of science.
The research data was collected by the means of quantitative survey that was addressed in the fall 2021 to learned societies in Finland. 116 unique societies responded to the survey representing different fields of science, social science and humanities. We analyse a group of questions focusing on the importance of different activities related with science communication and public engagement in the work of the societies.
Our study shows that learned societies are indeed active in making science public but they also provide various possibilities for scholars to impact on society by their research. Societies for example disseminate research results for different audiences, participate in public discussion and provide possibilities for collaboration across institutional and disciplinary boundaries. These among others activities are identified as mechanisms producing societal impact of research (Muhonen, Benneworth, & Olmos-Peñuela 2020). In our paper, we will discuss the results in detail.
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943. OPENING UP AS A WORK: A TENTATIVE COMPARISON BETWEEN OPENING UP SCIENCE TO SOCIETY AND OPEN ACCESS TO RESEARCH ARTICLES BASED ON PROFESSIONAL TRAJECTORIES

OTTOLINI LUCILE (UMR LISIS) Noël Marianne (CNRS)

If we consider the last twenty years of advocacy for open science and the more recent multiplication of programs and funding, one can consider that open science is becoming a real mantra. A mantra that covers a diversity of dimensions, from opening up scientific institutional governance, to opening up access to science outputs, research fields and methodological orientation.
The diversity of those initiatives makes their common analysis difficult. Our communication aims to fill this gap by

attempting to produce a common analysis from the diversity of experiences. We focus on the experiences and profiles of professionals whose daily work is dedicated to "opening up" science. They were or are open science officers (charg s de mission) in French technology assessment institutes and scientific organizations, or former research librarians in Sweden.
Our fieldwork, based on interviews (n=41), participatory observation sessions (n=24) and institutional archives leads to the hypothesis of the emergence of a professional category. The data covers up a large period of ‘’opening up’’ institutional intervention (from the early 2000’s to the last 2020’s). This empirical and analytical perspective leads to not take ‘’opening up’’ ambitions and initiatives (publication or institutions) as granted, but as a sociological object for investigation. Our proposition is to explore professional skills and the process of developing new skills in their ‘’opening up’’ daily work. Three categories of skills emerge: institutional competencies that help professionals in their quest for institutional transformation, social competencies that help professionals in the creation and facilitation of networks, and technical competencies that offer professional legitimacy for building openness ambitions. We will attempt to analyze whether the development of these professional competences as a result of comparison is a resource or a threat to the shift towards openness.

507. A FAIR DILEMMA - ENGAGING VALUES IN TIMES OF OPEN DATA

Rasmus Kvaal Wardemann (University of Vienna)

Through the Open Science movement, the scientific community is hoping to create a better future. Open Data might make us choose for whom.
Inspired by ideas of openness, transparency and equity, the Open Access movement gained considerable traction in the early years of the new millennium. But this hasn’t been without critique. Now, on the frontier of Open Data, further tensions arise. In addition to demanding the open and free publication of research data, Open Data policies increasingly set expectations to the quality of the data as well. Large funding bodies, like the NIH in the US, and Horizon in the EU, require data to be FAIR – Findable, Accessible, Interoperable and Reusable.
My research applies a critical approach to the FAIR principles through engagement with public and policy documents and interviews with actors in the academic and political communities. On this basis, I argue that, through a process of narrative intermingling, the FAIR principles introduce and seek to universalize the situated concerns of western bio-informatics within the context of Open Science. This, in turn, gives rise to tensions across geographical and disciplinary borders, along continuums of digitalization, datafication and capital. The science community is thus challenged to re-consider what we value: equal opportunity of participation and epistemic richness, or data-fueled efficiency? What’s the price of a FAIR future, and is it worth it?

Room N116 - Panel 066. EMBODYING THE TECHNOSCIENTIFIC FUTURE OF ASTROPHYSICS AND PLANETARY SCIENCE

Jarita Holbrook (University of Edinburgh)
Duane Hamacher (University of Melbourne)
Annette S. Lee (Arizona State University)

Astronomy is central to understanding our place in the universe and cultures from the ancient past to today regard the night sky as an important element of the world around us, informing cultures about survival, tradition, law, social structure, and memory. This can be traced back tens-of-thousands of years in Indigenous cultures of the globe. Today, astronomy and space science are at the forefront of developing new technologies, pushing the limits of our measurements of the universe, and serving as an anchor point of intrigue and inspiration. The latest decadal survey was released in late 2021, which presents a snapshot of USA astrophysics along with connections to the rest of the world but also lays out their technoscientific future in terms of future space missions, future ground based telescopes and future astrophysicists. This requires growth, development, raw materials, multinational facilities and more that have historically disadvantaged Indigenous people, infringe on Indigenous land rights and exploit Indigenous traditions of the sky to suit an agenda that provides long term benefits to astrophysicists and space scientists. This has led to the astronomical and space community becoming entangled with politically fraught projects such as the Thirty Meter Telescope (TMT), which is generating substantial debate and even division within the community as awareness and recognition of Indigenous rights is increasingly supported by that community. This has created a negative public narrative that overshadows the entire astro/space profession and everybody within it, regardless of their personal or political stances. Since these scientific infrastructures are co-funded by government bodies using public funds, public opinion matters. The uncertainty and instability around the future of ground breaking projects has been amplified by the pandemic, while the launch of mega-constellations of artificial satellites is negatively impacting our view of the stars, affecting scientific and Indigenous communities all, albeit in different ways. How is the rapidly changing technoscientific future being addressed? Where do Indigenous knowledge holders and their astronomical knowledge sit in this narrative? Can the technoscientific future be one of expansive and inclusive approaches, guided by intersectional bodies? If an alternative future is being proposed, who will be the beneficiaries? The decadal survey introduces a new term ‘community astronomy’ emphasising three associated actions to listen & empower, to aim to do good for all, and to invest in the future, together. This panel invites people studying astrophysics/astrophysicists, space science/scientists, members of the space/astronomical community, Indigenous knowledge holders and stakeholders to present on engagements/entanglements with technoscientific futures and beneficiaries.

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295. FROM MYTH TO SCIENCE: RECONCEPTUALISING THE ROLE AND NATURE OF INDIGENOUS ASTRONOMY

Duane Hamacher (University of Melbourne)

The knowledges and traditions of First Peoples of the world have long been regarded as the realm of 'myth and legend', viewed as far removed from the worlds of science and technology. Today, collaborations between Indigenous Elders and scientists are revealing the complex layers of scientific thought, reasoning, and advancement of traditional star knowledges. These systems of knowledge describe the relative dynamics of the Sun and Moon, the motions of the planets in our Solar System, the shifting of stars in the sky, the visibility of aurorae, the passing of comets and the impact of meteorites. Elders teach that everything on the land is reflected in the sky and everything in the sky is reflected in the land. In this regard, one's ability to thrive and survive in an ever changing world is dependent on your ability to 'read the stars' - that is, to be able to observe the subtle changes in the positions and priorities of the Sun, Moon, and stars, connect this to event on the Earth, and pass that knowledge on to future generations through oral tradition. This requires frameworks that recognise the impact, relevance, and benefits of these knowledges in terms of science rather than relegating it to only having relevance in the context of the social sciences. These frameworks can guide meaningful and respectful collaborations with Indigenous Elders to learn about our past, our current research and development practices, and how we can tackle the important problems and pressing issues of the future. This talk will discuss some of these frameworks and show ways that Indigenous and Western ways of knowing can be mutually beneficial to lead the way to better outcomes for us all.

788. CHASING THE STARS NAKED EYE IN SOUTHERN BENIN REPUBLIC THE TOFIN FISHERMEN DAILY NAVIGATION, KNOWLEDGE PRODUCTION, CURRENT ADAPTATION AND INNOVATION STUDIES

Dafon Aimé SEGLA (University of Abomey-Calavi) Jean-Eudes MISSIKEY (Université d'Abomey-Calavi)

Where do Indigenous knowledge holders and their astronomical knowledge sit in the modern rapidly changing techno scientific future of astrophysics? The present project revolves around the research among the indigenous peoples of the Tofin, a West African people living mainly in southern Benin, Nigeria, Togo and Ghana. Since October 2021, we have been collecting, using the Toffin local language, the names of the different planets in order to reconcile the traditional African cultures with the Western one in the field of astronomy. It is indeed scientifically interesting to find out how the local sky knowledge influences the naming of the new born child. It appears that names are aligned on the knowledge of the planets and stars. Furthermore, we seek to document the knowledge of the sky of the people as guidance in daily navigation for fishing on the sea, lake and lagoons, as basis for the organization of social and cultural life, and for more: how the cycle of the stars is used to define the harvest periods, how stars are used as guide during extensive marine navigation or hunting parties, etc. We also investigate their knowledge of boats building technologies.
We plan for expeditions and camps with the local people in order to question wise men and the fishermen in Tofin community, sharing their daily life and understanding what and how they use the different stars to navigate on the waters and go on new territories. During these expeditions and camps, we will organize evening's observations with a telescope offered by RFI (Radio France Internationale) & SSVI to verify the accuracy of people's empirical knowledge with modern theoretical models, thus allowing them to better connect with the sky, the world and future technological innovations.

167. CO-PRODUCING EDEN: EMBEDDING THE LOCAL COMMUNITY AT THE HEART OF A RESEARCH PARTNERSHIP

Andy Yuille (Lancaster University)

The Eden Project is an educational charity and social enterprise. Its mission is to create a movement that builds more caring relations between people and the natural world. Its first site was in Cornwall, South West England. It has plans for 11 new sites across five continents, including one in Morecambe, North West England. A key element of this 'Eden Project North' (EPN) is a research partnership with Lancaster University that will align Eden's ethos and LU's role as a civic university. We are laying the foundations for deep and wide community co-creation of this research partnership, intending to involve the community not just at every stage of the research lifecycle of individual projects, but also in shaping our overall research strategy and direction. Loosely adapted from the idea of an extended hybrid forum (Callon et al., 2009), we aim to a) co-produce a model for ongoing community engagement in the EPN research partnership, and b) secure substantive community input from the outset into overall direction, individual projects, and desired outcomes. This is intended to ensure both that the research programme responds to local needs, values, and ambitions, and is able to draw on a diverse range of local knowledges, experience and expertise. We hope to achieve this by (i) Engaging a core group of stakeholder organisations able to facilitate two-way communication with diverse constituencies; (ii) Generating an extensive network of wider stakeholders and citizens to engage with researchers on individual research projects; and (iii) Developing institutional structures to facilitate the ongoing co-production of research, and research strategy and direction. This paper will report on the progress of this project and the practical and theoretical challenges encountered on the way, and reflect on learning that may be useful to inform co-creation endeavours elsewhere.

098. ASTROMOVES: NAVIGATING ASTROPHYSICS CAREERS DURING THE COVID PANDEMIC

Jarita Holbrook (University of Edinburgh)

The ASTROMOVES project studies the career decision-making of astrophysicists with a focus on those circulating through Europe. The project was started during the COVID global pandemic, thus it was unsurprising that the astrophysicists interviewed included the impact of the Pandemic on their work lives, their self defined productivity and relatedly their home lives. As part of the discussions about their career moves, they were invited to discuss their emotions; these emotions are different from but in some cases overlap with the emotions expressed connected to their Pandemic lives. In terms of the future, the astrophysicists were invited to envision what optimal conditions needed to be in place for maintaining their academic and research inclusive careers. Though ASTROMOVES includes Queer, African Descent, Asian Descent and disabled scientists their intersectional identities did not translate to unique emotions or envisioned futures.

Room N105 - Panel 083 REFRACTING THE GOOD IN AND THROUGH ENVIRONMENTAL MARKETS

Kamilla Karhunmaa (University of Helsinki)
Kristin Asdal (University of Oslo)
Trine Pallesen (Copenhagen Business School)

Environmental problems are often described through the notion of a market failure, or the inability of markets to account for the costs associated with the production of goods and services. The notion of market failure calls for internalizing externalities, thus focusing environmental economics on the calculation and minimization of harm and cost through the design of market interventions. A classic example is thinking of climate change as “the greatest example of market failure” (Stern, 2006) which requires valuing and accounting for the damages and costs caused by climate change.

The intersection of market failures and environmental concerns has attracted attention in STS. Work succeeding Callon’s (1998) essay on externalities has studied how economists, accountants and other actors interact in attempts to deal with market externalities through instruments like emissions trading (e.g. MacKenzie 2009). More recent work has focused on “market design” or the new types of applied engineering and economics that claims to know how to make markets respond to all sort of collective concerns (Frankel, Ossandón, Pallesen 2019). Less attention has been placed on how environmental markets perform, refract and invest in notions of the good (Asdal et al., 2021, Geiger, 2021). With the good, we refer here to a range of normative stances from the notion of individual benefit to the public good and beyond to the idea of a good economy and society.

In this panel, we are interested in papers that focus on how notions of the good are performed in and through environmental markets as well as in the production of environmental goods and services. What societal visions or sociotechnical imaginaries of the good are incorporated into and exhibited by environmental markets and their governance (and consequently which ones are excluded)? How do governments, civil society organizations and scientists aim to shape or refute environmental markets and with what notions and justifications related to the (private or public) good? How does science feature in demarcating what is thought of as a good environmental market or product? We aim to make visible how actors interacting with environmental markets are constantly reformulating notions of both the private and the public good and in doing so, are speaking for other human and more-than-human needs and desires.

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Session 1

129. WASTE IS MONEY: CLEAN TECH STARTUPS AND THE PRACTICAL WORK OF TURNING ENVIRONMENTAL CONCERNS INTO COMMERCIAL OBJECTS.

Tomas Ariztia (Escuela de Sociologia, Universidad Diego Portales)

This paper focus on examining ordinary practices and devices trough which waste management technologies (clean tech) are qualified and evaluated as commercial objects. In doing so, we seek to unpack the tensions and challenges associated with ongoing processes of marketization of environmental concerns trough the development of technoscientific “solutions” designed as commercial products and/or services. We also discuss the frictions between different notions of the good taking place along these processes, in particular the tensions around economic and environmental good. The paper does so by reporting the findings of a three-year qualitative research with clean tech startups in Chile.
We focus on two key elements of this process. First, we explore the sets of practices and devices trough which clean-tech startups define the value of their products and/or services. More specifically, we describe the mundane process through which waste is turned into profitable resources as result of sociomaterial interventions consisting

in situating waste in a space of calculative market equivalences. We show how this process is tied to a twofold operation: on the one hand, the production of discursive “discovery stories” (Tsing 2001), on the other, a practical process of singularizing the market value of new goods and services. Second, we also explore the key role of regulatory devices -innovation schemes, policies, and programs- as key spaces through which the economic value of new business is defined and contested.
The paper finishes discussing whether a pragmatic approach to the myriad of mundane practices and devices trough which environmental business objects are enacted can be a fruitful for critically engage with the increasing pervading logics of capitalization and commodification of environmental concerns.

835. A GOOD INDUSTRY MODELLING GOOD TECHNIQUES: TRANSFORMING PRACTICES AND DEFINING ENVIRONMENTAL QUALITY IN THE ROADWORKS MARKET

Roman Solé-Pomies (Center for the Sociology of Innovation, Mines ParisTech)

An ordinary activity in the modern economy, roadworks is not generally conceived as an environmental engagement. Yet, French roadworks industries strive to demonstrate their market can respond to an ecological agenda. This contribution examines the role of modelling techniques in this endeavor. For ten years, Routes de France, the French syndicate of roadworks companies, has been developing an environmental comparison software called SEVE. This tool enables road managers, mainly public authorities, to compare the environmental impact of different responses to tenders. While price and quality are usual selection criteria, SEVE adds a complementary layer by modelling the environmental impact of roadworks. But how is it concretely intended to transform market practices?
Companies fill in digital responses to tenders, and may propose alternate solutions. Each solution lists roadworks techniques according to a shared nomenclature, and gives data regarding the transportation of materials. These solutions are assessed using a common, contributory database that links all operations to their environmental impact, relying on a partly external system of certification. SEVE then automatically produces standardized reports and summary sheets, displaying the environmental impact of each offer through a number of indicators, notably carbon emissions and energy consumptions.
In this paper, I draw on several interviews and discussions at Routes de France, together with documents related to the software. Strikingly, SEVE developers acknowledge that their tool cannot actually predict the impact of roadworks. Rather, it aims at making new criteria count in the roadworks market, and encouraging companies to offer “better” alternatives. I thus argue that SEVE is best understood as an intervention on the roadworks industry itself, an attempt to demonstrate the ability of this industry to develop shared and reliable tools. Companies claim to make the roadworks market more environmentally virtuous, using their technical expertise to transform the definition of a “good” product.

422. HOW IS IMPACT GOOD? ENTANGLING THE 'BIO' AND FINANCE WITH AN ENVIRONMENTAL IMPACT BOND

Olli Tiikkainen (University of Helsinki)

One of the ways through which environmental markets are constructed lies in the roles given to and taken by novel financial instruments. This is understandable from the perspective of framing environmental problems as negative externalities: in order to deal with these 'overflows' better, new kinds of instruments are suggested as necessary tools in addressing collective concerns.
An example of such an instrument is the environmental impact bond (EIB), a public-private partnership where private investors provide the starting capital for environmental impact seeking projects, and are only paid back, with revenue, if impact can be proven to have been achieved. EIBs – adapted from the practices of social impact bonds (SIBs) and impact investing – thus seek to attract investors to participate in solving environmental problems with the help of economizing practices in order to achieve sustainability transitions.

In my paper I investigate how the above mentioned dynamics is positioned with the wider question of (bio)economy-society relations. As a case study I analyze the construction dynamics of the 'Nutrient-EIB', a Finnish EIB aiming to develop markets for manure-based nutrients, which would potentially decrease both the use of mineral-based nutrients and the eutrophication of the Baltic Sea that agriculture-based manure contributes to. Inspired by the need to analyze the ways in which distinct notions of a 'good economy' are entangled in envisioning the relation between the 'bio' and the economy, I examine the (e)valuation features of the Nutrient-EIB and the ways in which stakeholders of the EIB framed the instrument. I focus especially on how in EIBs the future-leaning notion of impact can be seen as the common 'good' through which modelled and measured environmental effectiviness and resourcefulness are entangled to the pursuit of financial profits and what kind of implications this has.

974. A NEW MARKET FOR FINANCE: HOW FINANCE IS BECOMING THE NEW ENVIRONMENTAL ACTOR

Kristin Asdal (TIK Centre for Technology, Innovation and Culture, University of Oslo) Stine Engen (TIK Centre for Technology, Innovation and Culture, University of Oslo)

Finance is sometimes described as an activity that makes money with money (Muniesa 2014). But finance is also something more, and different. Finance is increasingly called for as the actor that is now needed in order to solve the sustainability challenge. Simultaneously, finance is taking it up on itself to partake in this endeavor. Drawing on the Norwegian case, this paper follows finance into the sustainability realm and investigates how the financial sector both situates itself as an environmental actor and works both practically and strategically upon the environmental issue. The paper quite concretely delineates the practical, mundane and strategic ways in which the financial sector is and has been working both upon political actors and the environmental issue in order to do good with money (Asdal et. al 2021). We outline the key 'tools of valuation' finance works by in order to accomplish these tasks. In doing this, we investigate what happens when finance is not only after making money, but seeks to doing good while making money. How is that of producing new goods for finance, such as new markets for financial products, combined in practical arrangements and in administrative and financial procedures, with handling and solving environmental problems? Second, we ask what registers we as STS-scholars should draw from in analyzing these phenomena and what challenges this raises to combine lessons from social studies of finance and markets with political theory and environmental activism. Finance might be the quintessential economic actor, but must also be understood by its capacities as political actors and for its political procedures and arrangements.

Room N102 - Panel 087. ENERGY FUTURES FROM THE PAST

Ange Pottin (ENS Paris)
Claire Le Renard (LISIS)
Maël Goumri (Graz University of Technology)
Martin Denoun (GSPR, EHESS)

How does the energy past weigh on energy futures?

STS scholars are well aware of societies' dependency to large energy infrastructures such as electric, gas, or fossil fuel supply as well as their production networks. Yet an important area of investigation remains, especially concerning the so-called « energy transition » (Fressoz, 2014) and the way infrastructures inform our political life forms (Mitchell, 2011). For instance, how do you plug wind energy to the existing electrical grids that were designed and built to accommodate nuclear or fossil fuel power plants?

In addition to inheriting material infrastructures, one also inherits past ways of thinking about the future. Those can be labelled scenarios (Dahan, 2007), sociotechnical imaginaries (Jasanoff & Kim, 2009), promises (Van Lente, 1993) or horizons for capital accumulation (Moore 2015, Malm 2016). In the discourses of engineers and policy makers, past futures (Koselleck, 2004) frame the ways one relates to the future of energy. In the nuclear industry, for example, projects such as fast breeding reactors or nuclear fusion pertains to visions of the future that can be traced back to the 1950s. Wind or solar energy projects are still framed within the gigantism of 1960s and 1970s Western plans (Evrard, 2013). Some might even argue that there has been significant continuity in the way Western states or companies view fuel supply management since the end of World War II.

Nevertheless, these visions cannot be translated in our present without modifications. We must be sensitive to the evolutions that are dictated by the current situation regarding energy issues. The oil industry needs to integrate climate change and shortage scenarios. The nuclear industry is facing the decommissioning of infrastructures that were built four decades ago. The world in which the current « energy transition » discourses exists is in many ways extremely different from the world that emerged from WWII.

This panel will address the following questions: how are the visions of the energy future linked to the networks and infrastructures we inherit? How do the past visions of energy future inform current expectations? How do they inform the very conception of infrastructures? How does the current energy situation modify these past visions of the future? Which conceptual and theoretical tools (e.g., imaginaries, promises, horizons for capital accumulation, horizons of expectation, etc.) are the best suited for understanding the permanence of past futures as well as their current mutations? Addressing these questions allows us to examine the promises of change that are made to satisfy climate objectives as well as the infrastructural legacy that such a transition entails.

Organized by scholars in philosophy, sociology, and history, this panel aims at encouraging interdisciplinary exchanges.

Session 1

444. FOSSILIZED FUTURES: UNCOVERING THE HISTORICAL MATERIALITIES AND IMAGINARIES OF OIL AND GAS IN THE UK.

Naima Kraushaar-Friesen (Uppsala University) Magdalena Kuchler (Uppsala University) Gavin Bridge (Durham University)

Spaces of fossil fuel production, processing and transportation, are simultaneously material and social phenomena that implicate a broad range of societal actors, across local to national scales. These actors reflect different cultural and political allegiances to fossil fuel resources, and have differentiated abilities to shape the futures of these spaces. However, existing infrastructures of fossil fuel extraction, processing, transportation and consumption can enable and/or constrain the scope of visions of energy futures. Drawing on the case of the UK, where offshore oil and gas extraction has been part of the economy for half a century, and where there is now an increasingly intensive debate on the future of offshore extraction, this paper investigates how past materialities and visions of oil and gas assemblages shape imaginaries of energy futures in the context of decarbonization. This paper contributes to Science and Technology Studies by expanding the conceptual conversation between research on materialities and sociotechnical imaginaries. Thinking through the case of both offshore oil and gas, which implicate different materialities of both the energy source itself and the required infrastructure for extraction and use, we show how these materialities condition and reshape visions for possible futures. We consider how these materialities are negotiated in the imaginaries of state, corporate and civil society actors. Through archival research and interviews, the paper interrogates material barriers and enablers for imagining energy futures in spaces historically shaped by oil and gas extraction, transportation, and processing, in this case tracing the

historical development of imaginaries of the UK Continental Shelf since the beginning of its development after the Second World War. It provides the groundwork to then examine how these past visions shape current debates on energy in the North Sea.

647 FLEXIBLE QUALIFICATIONS OF THE MATERIAL OBJECTS OF ENERGY FUTURES

Le Renard Claire (EDF R&D, LISIS)

Since the beginnings of nuclear power, fast neutron reactor technology has been linked to a 'breeder' socio-technical imaginary (Jasanoff & Kim, 2009, 2015), pointing to the possibility of generating fuel in parallel to its consumption. The case for this paper is the turbulent history of the French ‘Superphénix’ fast neutron nuclear reactor, initiated as an "industrial scale prototype" in the early 1970s. The regime of the economy of techno-scientific promises (Joly, 2010) proved crucial to explain how the promoters of the project assembled the resources for its development, creating scientific and technological development pathways. But while the prototype experienced legal cases against its authorisation decree, intense controversies, then cost overruns and leaks that outsmarted detection systems, the 'breeder' socio-technical imaginary remained untouched.
Previous research analysed the implicit specifications behind the qualifications of the 'industrial scale prototype', a definition leaving space for a wide range of interpretations (Le Renard, 2016). Basing on further research, this paper opens up a reflection on the material objects of energy futures. During the progressive abandonment of the project, its promoters had to shift its definition and purpose. The work necessary to disengage from an innovation policy involved the industrial de-qualification of the prototype and its re-qualification as an epistemic object (Knorr-Cetina, 1996).
This paper articulates the ontologies of the objects of techno-scientific development with three modalities, related to visions of the future, their justifications and to the modes of evaluation during moments of trial (controversies, debates, decisions...) determining to which extent these objects are open or closed. These modalities are prototypes (a largely polysemic word), demonstrators, and epistemic objects, respectively linked to a rhetoric of “progress” towards a socio-technical imaginary, the regime of the economy of techno-scientific promises, and the ideal of "technical democracy".

841. FROM LIMITS TO GROWTH TO GREENHOUSE GAS EMISSION PATHWAYS: REPRESENTING FUTURE TECHNOLOGICAL CHANGE IN GLOBAL MODELS (1972-2007)

Cointe Béatrice (CSI - Centre de Sociologie de l'Innovation, Mines Paris/CNRS) Cassen Christophe (CIRED - Centre for International Research on Environment and Development, CNRS)

From the World models used by the Club of Rome in the 1970s to study “the predicament of mankind” to contemporary Integrated Assessment Models producing greenhouse gas emission pathways for the IPCC, global models have served as laboratories for the articulation of economic, environmental and technological knowledge. Despite their differences, these models all rely on conceptions of technological change and innovation as drivers of the long-term evolution of human societies. Much effort and controversy has gone into modelling technological change as a quantifiable, global variable.
What can the history of global modelling tell us about shifting understandings and conflicting conceptualizations of technological change and innovation in the second half of the twentieth century? In this paper, we argue that the development and confrontation of global models constituted technological change into a distinct variable and an object of research. We analyse debates on the conception, representation and formalisation of technological change as they played out at four moments in the history of global modelling: the publication of the Limits to Growth in 1972; the ensuing “futures debate” when models were developed to provide alternative futures to the Limits to Growth; the publication of the IIASA Energy Study in 1981; and discussions about the representation of technological change in Integrated Assessment Models from the late 1990s onwards, when global models turned to climate change. In these four instances, conceptions of technological change were opened up, making it possible to analyse the relations between modelling choices and the political discussions models take part in. We show that, while in the 1970s technological change was explicitly understood as a social phenomenon, its formalisation as a quantifiable parameter with its own predictable dynamic drew focus away from its relations to social change.

972 ENERGY TRANSITION IN THE WIND? ASSESSING THE FRENCH ENERGY POLICY WITH THE SAINT BRIEUC OFFSHORE WIND TURBINE PROJECT.

Goumri Maël (Université de Paris/Cermes 3)

In the Bay of Saint-Brieuc, Brittany, France, in the summer of 2021, an armada of fishermen's boats surrounded the underwater drilling platform, the Aeolus, which anchored one of the first French offshore wind farms in the ground. If the fishermen did it in the name of defending their activities, they also did it, and mainly according to them, for the protection of the environment. After several breakdowns, the Aeolus has experienced two episodes of oil pollution in the sea. Broadly speaking, it is the possible disappearance of endangered species including birds, mouse warmers, dolphins, and fish, and thus the disruption of a rich but fragile ecosystem that worries the fishermen but also many biologists. Most naturalist associations have noted the significant risk to biodiversity and denounced the lack of dialogue and discussion with the park's promoter (Goumri 2014). The French

environmental authority had moreover agreed with them in a 2016 opinion, indicating that the environmental protection guarantees provided by the developer, a subsidiary of the Spanish operator Iberdrola, were insufficient. The fact that the environmentalists are standing up against a project that is part of the energy transition raises questions and is the beginning of my investigation to analyse the policies of energy transition in Europe in a new light. How can such an ambitious policy in favour of renewable energies arouse immense resistance from the ecologists themselves? Indeed, Saint Brieuc is not the only case and literature recently analysed the impacts of energy transition on the environment (Gasparatos et al., 2017). Analysing the Saint-Brieuc case and mobilizing recent archives from the French Ministry of ecology, this paper argues that this controversy is linked to political choices that fostered powerful mega project rather than localized and small scale projects.

Wednesday 6th July

15:45-17:15

Room N109 PANEL 003 CONFLICT, CONTRADICTION, AND CRISIS IN DATA-INTENSIVE HEALTH INNOVATION

Session 2

983. IS HEALTH DATA A PUBLIC GOOD? EXTENDING POLITICAL ECONOMY CRITIQUE BEYOND DATA AS COMMODITY

Sarah Cheung (University of Edinburgh)

Political economy critiques of the digital economy have tended to focus on inequitable distribution of monetary benefits or lack of democratic accountability due to the fact that the lion's share of technological expertise and data-collecting infrastructure – including platforms and machine-learning (ML) algorithms – is proprietary to a few global 'tech giants'. In doing so, these critiques largely accept the positioning of data as a commodified good.
While these approaches have contributed fundamental insights into shifting socio-political relations in our digital era, a paradigm of data as commercial commodity is unable to capture impacts from expanded uses of certain types of data that is collected and stored by governments, such as public health data, that are often positioned as 'digital public goods'.
Recognising Kitchin and McArdle's claim that the phenomenon of 'big data' as an analytic category needs to be unpacked, this paper seeks instead to interrogate the premise of certain data as a 'public good', using the example of personal health data generated, collected and stored by the National Health System (NHS) in the UK. Drawing on and extending the concept of the 'legal construct', which Cohen argues is deployed to support the activities of the surveillance economy in its current form, this paper argues that certain presentations of health data as a 'public good' resource underpin justifications in how it is used and shared, particularly data generated and collected through public healthcare. Through examining this construal of data that is collected through public service provision as a 'public good', this paper raises questions over what it means to have genuinely democratic access to and use of public data.

89.6 DATA ETHICS IN A HEALTH EMERGENCY

Melanie Smallman (UCL) Cian O'Donovan (UCL) James Wilson (UCL)

Has data ethics been a casualty of covid-19? Data has played a central role in how we understand, mitigate, and adapt to covid-19. For instance, it is critical to the work of new public health infrastructures such as vaccine certification systems and test and trace infrastructures. And aggregated data about individuals provides the basis for priority shielding lists that at once protect people deemed vulnerable to covid-19, and also re-make the very categories of vulnerability on which decisions to recommend or enforce their shielding and isolation depend.
But what happens in health emergencies when urgency so often trumps careful deliberation? The pre-supposition of ethical advice is that decision-makers will listen and act in good faith. But for those generating ethical deliberation, what does it mean to maintain integrity while giving advice to powerful people during an emergency? This paper aims to understand how ethics advice has featured in decision making during the pandemic and the governance arrangements of data use in such situations. Other fields have developed 'Emergency Ethics' in acknowledgement that the parameters and values at stake change in an emergency. The purpose of paper is to examine how data has been used during covid in UK and reflect on how this impacts the ethical principles that currently govern the ethical use of data, with a view to developing a series of principles for governing data ethics in a future pandemic or emergency.

276. MEDIA COVERAGE OF BIG DATA EXPLOITATIONS IN PUBLIC HEALTHCARE: THE NHS CARE.DATA CONTROVERSY

Paraskevas Vezyridis (Nottingham University Business School)

Electronic Health Records (EHRs) have become invaluable sources of data for innovative public healthcare management and biomedical research. Integrated from multiple healthcare settings (e.g. GP Practices, Hospitals), these extensive datasets could offer researchers unprecedented opportunities for more pragmatic and cost-effective monitoring of healthcare trends and, effectiveness of new treatments.
Care.data was an English NHS programme of work announced in 2013 with the aim of bringing de-identified patient information from primary care (GP) EHRs into a central database for linkage to other NHS hospital, community, mental health and social care electronic records. However, this controversial state programme was scrapped in 2016 after a series of delays and approximately 1.5 million people opting out.
LexisNexis was used to retrieve news articles on 'care.data' in UK national broadsheets and tabloids (2012-2017). After scanning for relevance, approximately 560 media items were organised and analysed using NVivo.
Here, I use the metaphor of the 'fire object' (Law and Singleton, 2005) to study the messiness and radical discontinuities created by the generative absent presence of a data infrastructure that never actually materialized. Through its relatively short existence mainly on paper, this big data programme shifted and changed as it engaged different (inter)national concerns in search of a consensus on purpose and value proposition.

The imprecisely known volume and value of NHS data was used by central designers to focus attention and debates on transforming the NHS, saving lives and growing the economy after a financial crisis. However, as the programme progressed away from central control and into public and private spheres it brought to presence realities of informed consent and public engagement, techno-economic feasibility, ambiguous contracting and NHS privatization.
This study highlights the important role media coverage of such controversies play in the ongoing attempts at capitalizing these public datasets.

814. RISK, TECHNOLOGY, SOCIAL REPRODUCTION: ACCOUNTING FOR ALGORITHMIC RISK CALCULATION IN POPULATION HEALTH

Rachel Rowe (University of New South Wales)

Technology corporations are flooding the field of public health with promises of efficient and precise quantification, monitoring and intervention in health risks. These promises have risen to prominence not only because of advances in computational science (Joque 2022) or the profit motive of technology corporations (Zuboff 2019; Sadowski 2019), but also as a result of major transformations in the global economy. To elaborate this argument, this paper probes the shift from New Deal era conceptions of population risk to the ascendance of microeconomics in public finance. I examine debates among influential economists of the post-war era, drawing out the resonant differences between neoclassical and neoliberal rationales of risk in their different theorisations of the role of information within markets. Finally, I locate these rationales in changes within U.S. public management during the Reagan era. From the 1980s in several US federal departments (including the FDA), pricing health and environmental risks became based on calculations of what people would pay to avoid harm (the 'willingness-to-pay' approach) (Hood 2017). This was part of an important shift from treating risk as something to be averted, reduced or borne collectively; to calculating risks speculatively and rendering them as equivalent and exchangeable.
At the time when these financial logics were taking shape in U.S. public finance, the technological capacity to measure and price risk on an individual level did not exist. Today things look different. On the surface, we may query population health analytics platforms newly adopting algorithms that have been used for decades in the financial sector, pay for performance contracts in population health, and/or data scientists fluidly moving between financial and health analytics. This paper interrogates the foundations of such developments within the economic history of the risk-technology-reproduction nexus.

Room N101- Panel 008. MICROBES I: THINKING PAST DUALISMS

Session 2

131. MICROBES, MOSQUITOES, AND MORE-THAN-HUMAN COMMUNITIES: THE RELEASE OF BACTERIUM-INFECTED MOSQUITOES IN RIO DE JANEIRO, BRAZIL

Luísa Reis-Castro (University of Southern California)

Aedes aegypti mosquitoes are being released in streets and alleys across Rio de Janeiro, Brazil. This may seem surprising since this species can transmit pathogenic viruses such as Zika, dengue, and chikungunya, and is typically portrayed as a winged enemy to be destroyed. However, a new initiative plans to transform the insect from a vector of diseases to an "ally" that addresses the very pathogens it transmits by releasing A. aegypti infected with a bacterium called Wolbachia—a microbe that can significantly reduce the mosquito's capacity to transmit viruses. In this case, this strategy would permit humans to live alongside the-now-bio-engineered A. aegypti: its bites would still be an annoyance, but no longer such a dreadful and relentless health concern.
This Wolbachia project is unfolding against the backdrop of historical and ongoing violence in Rio, with deadly conflicts and a constant sense of insecurity for those who live there. In this paper, I attend to and examine not the violence and insecurity per se but how these experiences have shaped the ways in which the project is implemented, explained, and understood. Several STS scholars have investigated efforts to "secure health," analyzing the various knowledge practices and techno-political interventions formulated to respond to perceived microbial threats—new, anticipated, and imagined. Here, however, I describe how a scientific and public health initiative trying to recast human-mosquito-microbe relations as no longer threatening was still defined by what I call "more-than-human segurança." By using the Portuguese word segurança, which means both security and safety, I argue that health projects, like the bio-technological Wolbachia strategy, are embedded within multiple understandings of what security, safety, and survival can mean in the places where these interventions are happening.

703. IMMUNITY AND MORE-THAN-HUMAN COMMUNITIES: NOTES ON PRIMATE-MOSQUITO-VIRUS INTERTWINING IN SERGIPE, BRAZIL

Tullio da Silva Maia (University of Exeter)

Yellow fever, dengue, Zika and chikungunya viruses. The imminent circulation of the first and the endemic regime in which the three latter mosquito-borne viruses circulate in Sergipe state, in the Brazilian northeast, mobilise a set of actions. In this paper, I bring the first notes of ongoing ethnography about the speculations of scientists and policymakers on human and more-than-human immunities to mosquito-related diseases in Sergipe. Complex socioeconomic and ecological scenarios throughout Sergipe have been challenging the collaborative actions between research and governmental institutions aimed at immunising Sergipe population. Local governmental plans to apply yellow fever vaccine, scientific development of dengue and chikungunya vaccines, observations to the mobility of nonhuman primates, monitoring of mosquito infestation in the cities, monitoring of marmosets' immunity in the forests as an indicator of immune to yellow fever forests. These actions make me raise questions about the paradoxical relationship between community and immunity, as suggested by Roberto Esposito. In other words, I present ethnographic extracts of intertwined lives of people, nonhuman primates, mosquitoes and viruses, as well as the speculations of how immunity is settled in these more-than-human communities.

327. INTERSPECIES AND MICROBIOTIC RELATIONS IN BIOMEDICAL VALUE AND KNOWLEDGE PRODUCTION

Alberto Morales (Princeton University)

In this paper, I examine the production of value, as value in translation through scientific, microbiotic, and interspecies lifeworlds. Specifically, I explore biodiversity through interspecies metabolic relations associated with ants and frogs to raise questions of difference and questions about the production and translation of scientific knowledge as value. Drawing on 18 months of multi-sited fieldwork examining microbes, collaborative scientific networks, and science capacity building in Panama's City of Knowledge, this paper foregrounds the importance of understanding shifting concepts and uses of life today and proposes new concept work to interpret scientists' speculative commitments and forms of experimentation in contributing to more livable worlds. Thinking with microbiotic communities as objects of study in natural products research, I ask how scientific practices and changing understandings of interspecies relations might provide insights into the ways value is produced in natural products research. Natural products scientists research interspecies relations to create new forms of mutualisms and interspecies care. Following my interlocutors, I do not rush to see these microbiotic organisms and their interspecies relations as already commodified/turned into commodities. I approach them as specialized or desired goods, not yet commodities, but life-giving organisms translated and transformed by natural products researchers into various value forms through biochemical, interspecies, human, and scientific disciplinary relations.

764. WITH, AGAINST, ALONGSIDE BACTERIA: SITUATING HUMAN-BACTERIAL RELATIONS THROUGH HOSPITAL HYGIENE MANAGEMENT

Antonia Modelhart (University of Vienna)

In my current research on antimicrobial resistance (AMR) in biomedicine, I analyse the broad dimensions of hygiene in hospitals and its relation to microbes and biomedical practice through hospital hygiene management. Based on empirical data I argue that hygiene management are practices that only at first glance are based on a biomedically established dualism of bacteria as resistant or non-resistant. Instead, so much more is considered in hygiene work that point beyond this dualism: health care professionals (HCP) practice calibrations of microbial life vis-à-vis human life that emerges out of situating human-bacteria relations within the biomedical logics of a hospital.

The hospital as place of therapeutic intervention and biomedical care configures a certain attention to bacterial life that is bound to the place. In complicated processes, decisions (that concern dimensions like architecture, cleaning, or technologies to name a few) about how to handle the bacterial compositions of humans and nonhumans in a neuralgic place have to be made on a daily basis. These practices of hygiene management are better understood as navigating a “bacterial spectrum” as Huttunen, Oinas and Sariola (2021) recently coined it.

In my paper I address hygiene management for one as an empirical case of ‘thinking past dualisms’ and second conceptualize local (micro)biologies (Lock, Koch, Yates-Doerr) in light of hygiene practices

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705. RECONSTRUCTING GENDER-MICROBES RELATIONSHIP: WOMEN, ANTIBIOTICS AND ANTIBIOTIC RESISTANCES IN RESEARCH AND INDUSTRY

María Jesús Santesmases, Spanish National Research Council (CSIC), Isabel M. Gómez Rodríguez , Spanish National Research Council (CSIC)

This is very much a work-in-progress presentation of our project in which we historicize the decline in producing and marketing new antibiotics from the 1980s onwards (DryAP, https://www.med.uio.no/helsam/english/research/projects/antibiotic-resistance-big-pharma/). A gender approach is focused on the circulation of microbes between genetics, biochemistry and healthcare, between academic and industrial laboratories, across geographical and disciplinary boundaries that reproduced once and again a gender order of practices and authority. So as to retrieve both women and gender, we focus on the material cultures of microbiology research on antibiotics and antibiotic resistances. We present a genealogy of gendered practices on the culturing techniques and its visual epistemologies, between the Petri dish and the genes, from microbiological practices of the times of biochemistry and molecular biology to the times of plasmids, genome sequencing and internet. All along these trajectories, microbes are being preserved, diluted and identified by an expertise of seeing, by categorizations of the different types of activities between the design of experiments and the experiences of culturing by care. The microbiological trajectories we examine aim at knowing about microbes’ activities, antibiotics activity, often in search of new antimicrobials, and the development of antibiotics resistances. We analyse those practices and narratives, which, we argue, are the basis upon which women and gender could be retrieved so as to reconfigure the biosocial order of human-microbes interactions.

Room N106 - Panel 010. ForeSTS

Session 2

1032. FORESTS AS TECHNO-NATURES: TRANSLATING DIGITAL ENVIRONMENTAL SUBJECTS

Robert Stock (Humboldt-Universität zu Berlin)

Agrawal's concept of environmental subjects (2005) describes how communities care about, feel responsible for and engage with forests. While Agrawal focuses on the connections between state regulation and subjectification, I am interested in situating environmental subjects in the context of ubiquitous computing and digital capitalism (Zuboff). I describe decentralised, dividual formations of users that are generated in and through digital media practices and are translated in processes of enrolement as representatives of sustainable media use and consumption (Callon). In doing so, I first heuristically distinguish between two modalities that articulate contemporary relations to techno-nature (White/Wilbert 2010) resp. neoliberal conservation (Büscher 2013): Searching and Consuming. First, Ecosia.org produces users who, apart from the major search engines, are committed to the reforestation of the rainforest and other threatened forest regions. Second, consumption of everyday items is now often flanked by sustainability imperatives: Numerous campaigns for tree planting and reforestation projects create environmental subjects who appear less subversive than tree sitters or radical squatter groups and who are included in late-capitalistic logics. Such environmental subjects represent partial positions in a global field full of frictions (Tsing 2005). In times of a damaged planet and climate crisis, they need to be contrasted with interventions of indigenous critique and knowledge, which are also increasingly intertwined with digital environments. In a similar vein, this also applies to forests, which are increasingly rendered as data formations and part of smart sensing environments (Gabrys 2020; Gray 2020). This paper is part of a new research project. It will present preliminary thoughts on forests as active agents of endangered digital naturecultures that generate partial and situated environmental subjectivities. The presentation will draw on various materials including blogs, newspaper reports or social media activism, which will be qualitatively analysed regarding their material-discursive engagements.

1002. DE-POLITICIZING FORESTS – TECHNOCRATIC VISIONS AND NORMATIVITY IN FOREST BIODIVERSITY RESEARCH

Manuel John (University of Freiburg)

Forests have been used for different purposes for millennia, with the extraction of timber traditionally assuming a central role. With the advent of the anthropocene, past and current ways of using forests have increasingly being called into question. Flaring debates on the role of forests in the context of climate change, the loss of forest biodiversity and other “values” related to forest show that the social nature of human-forest interactions is starkly brought back into societal focus.

This conference paper asks the question in which way (if at all) forest research (and researchers) discuss and negotiate the social nature of forest management while also exploring the role researchers assign to science itself. As a case study, I have chosen the field of research linked to an approach to forest management called “retention forestry”, aimed at integrating the conservation of forest biodiversity into managed forests (Gustafsson et al. 2012). Applying a discourse analysis inspired by the work of Callon (1986) and Latour (1987), I reconstruct the ways in which retention forestry is “problematized” in important papers of the field, as well as the implicit models of forests and human-forest relationships these problematizations are based on.

Situated at an interface between different scientific disciplines, a certain plurality of perspectives can be observed. Yet, a strong unifying element which can be identified is a belief in the central role of scientific knowledge as an orienting principle of forest management, often coupled with ‘flat’ (i.e. power-insensitive) managerial concepts like “multiple-use forestry” or “ecosystem services”, promising to unify different “demands”, “objectives” or “values” related to forests under one conceptual umbrella. Thus, they are taking up and propagating a mostly de-politicized version of forests as the object of “evidence-based management” in which differences and conflicts of values, interests and imaginaries of “future forests” get essentially obfuscated.

804. THE CHANGING TIMESCAPES OF OLD EUROPEAN FORESTS

Evan Fisher (GEODE, UMR 5602 CNRS, Université Toulouse Jean Jaurès) Ruppert Vimal (GEODE, UMR 5602 CNRS, Université Toulouse Jean Jaurès) Vanessa Py-Saragaglia (GEODE, UMR 5602 CNRS, Université Toulouse Jean Jaurès) Laurent Larrieu (DYNAFOR, UMR 1201 INRAE. CRPF-Occitanie)

This paper accounts for how changes in the role that time plays in ecological understandings of old forests has re-problematized forest management and conservation in Europe over the last four decades. It is based on the semiotic analysis of a corpus of 67 peer-reviewed English language articles published between 1984 et 2018. Analysis focuses on an aspect of these forests upon which all these publications agree: the passage of long

periods of time matter in temperate forests as a determinant of species richness and biodiversity. We focus in particular on two old forest timescapes: the temporal continuity of forest cover in Ancient Woodland, and the natural dynamics of Old-Growth Forests. Each timescape articulates three problems. First, how forest scientists enact, through their methods and analyses, forest temporalities as a key factor in understanding what an old forest is. Second, how these temporal enactments vary historically, that is, we narrate changes over the last three decades in how time matters to what these forests are. Finally, how changing forest temporalities are linked to specific ways of problematizing forests for conservationists and managers. In short, we describe how the different ways that time matters in the ontological affirmations of forest scientists are linked to different management and conservation styles. We claim, in particular, that two new temporalities have been integrated into these timescapes in recent decades: the future of cascading biodiversity loss associated with the concept of “extinction debt”, which problematizes old forest conservation in terms of landscape connectivity; and the historical longue durée of changing “disturbance regimes”, which problematizes management in terms of mimicking the cyclical dynamics of natural forests in order to recreate forest microhabitats.

953. TIMELY FOREST

Marie Widengård (Global Studies, Gothenburg University)

The forest war in Sweden has taken a temporal turn with climate change. By drawing on how forest time is articulated in media, this paper examines the multiple temporalities of forests that scientists express. It finds two temporal poles, which map onto the existing divide between those prioritizing production vs environmental values, or in other terms, clear-cut vs continuity forestry. But how is it that different scientists uphold different attachments to time; what is the interdependence between specific expertise and temporal understanding; and what do divergent temporal knowledges mean for forest futures? While temporal conflicts and contrasting imaginaries is nothing new, it is important to trace how forest temporalities are reset in climate and biodiversity crises, and to scrutinize the temporalities that are privileged in Swedish decarbonization politics. This paper does so by drawing on power-chronography, which places the question of timely forest in a grid of temporal power relations rooted in epistemic cultures.

860. (WILD)FIRE. INTEGRATING LOCAL KNOWLEDGE AND CULTURAL IMAGINARIES TO BUILDING RESILIENCE TOWARDS FOREST FIRES IN SPAIN.

Elvira Santiago-Gómez (Universidade da Coruña) Vincenzo Pavone (Consejo Superior Investigaciones Científicas) Carmen Rodríguez-Rodríguez (Universidade da Coruña)

Forest fires constitute one of the main environmental threats in southern European countries. Given the severity of the socio-economic, political and ecological damage that natural disasters, like forest fires, cause each year, the international community designed action programs for disaster risk reduction (DRR). The current Sendai Framework (2015-2030) recognizes the need of coordinated action between local, national and international actors to strengthen risk governance, to invest in disaster risk, and to enhance disaster preparedness. To improve resilience to natural hazards and achieve a full engagement of public and private actors into bottom-up initiatives oriented the mitigation of forest fires, the main objective of our nationally funded project, MitigACT (PID2019-1074443RA-I00), is to incorporate experiences and practices of different lay publics into DRR plans. Adopting an ANT perspective, our aim is further improve the current understanding of the concept of resilience by engaging different public and private actors in Canarias and Galicia (including farmers, firefighters, technology developers, decision makers, public authorities, CSOs) to a) define and analyze the cultural construction of this phenomenon, b) study how citizens assess new surveillance technologies such as drones and location-based applications currently implemented to improve the mitigation of forest fires and other non-technological solutions c) to facilitate the co-design of alternative prevention strategies based on the regional cultural heritage and their local knowledge.

Room N114 - Panel 018. THE CREATION AND IMPACT OF ROBOT VISIONS AS KEY ELEMENT OF TECHNOSCIENTIFIC FUTURES

Session 1

465. THE STRUCTURE AND IMPACT OF NARRATIVES AND SCENARIOS IN ROBOT DEVELOPMENT. A COMPARISON OF CARE ROBOTICS AND INDUSTRIAL COBOTS

Tim Clausnitzer (Technische Universität Berlin) Martin Meister (Technische Universität Berlin) Ingo Schulz-Schaeffer (Technische Universität Berlin) Kevin Wiggert (Technische Universität Berlin)

Based on empirical findings, we present interpretations about the structure and impact of two types of collective sensemaking in the social construction of future applications of robots: Overarching narratives and concrete application scenarios. We compare the domains care and industrial manufacturing.
In care robotics, we observe that advanced application ideas prevail although they again and again turn out to be too demanding technologically and to disturb the workflow of care workers. Such self-perpetuation against negative evidence is in part explainable by the rhetorical effects of the nursing crisis narrative which closely connects the picture of a dramatically increasing shortage of care workers with the promise to restrict automation to service tasks, thus giving them more time for the most valuable part of their jobs, sentimental work. The impact of the narrative is rhetorical normalization and alignment of the all relevant groups involved in the process of constructing a socio-technical future. Moreover, we find supporting mechanisms for this self-perpetuation at the level of application scenarios.
The application of collaborating robots in industrial manufacturing reveals a completely different picture. As in the care sector, we observe many advanced ideas in basic research. But sharply opposed to the care sector, these ideas are given up altogether before they can reach the shop floor level. This observation can in part be explained by the structure of the overarching narrative of flexibilization of industrial manufacturing because the meaning of flexibilization has only a vague common meaning, but strongly different concrete meanings for the groups involved. Thus, this narrative has the structure of a boundary objects, which reduces its impact on concrete socio-technical developments. Moreover, we frequently find that test scenarios are constructed to thoroughly evaluate any possible disturbance of the existing working conditions. That can in part explain the more conservative character of cobot applications.

060. WIZARD OF OZ METHODS AFFECTS THE IMAGINARY OF ROBOTS OF TODAY AND THE FUTURE

Sofia Thunberg (Linköping University)

Robots are increasingly seen as mankind's future saviours. Robots will, according to many discourses, help with the demographic shift; remove the human body from warfare; and increase safety in manual work. These imaginaries of all the good things robots can do are as of today often far from the truth. Technically, there are still many challenges to overcome before robots could co-exist in our physical environment, be social and intelligent, and perform tasks autonomously. Autonomous robots of today are simple and would not be able to work without human aid. However, imaginaries of robot capabilities, that often come from pop-culture, are being tested through Wizard of Oz methods. By wizarding a robot in a natural environment, researchers can test how more advanced robots of the future would be able to behave and measure the perception of the potential user. The methodology, however, raises questions about how robots really would act in the future, and if the wizard is fooling people to believe in a vision that might never come true.
To this panel, I would like to bring attention to potential dubious effects Wizard of Oz methods might have on the current and future imaginaries of robots, and if this method should have clearer guidelines for usage. For example, the standard in these kinds of studies is that the participants are told afterwards that the robot was controlled, but have not the users already formed their mental model of what robots can do by then? Furthermore, there is a question of whether the wizard should act naturally (as a human) or try to act as a robot of today or by imagining how robots will behave in the future. These choices create a lot of varieties in what wizarding means and could help form an unreal imaginary of robots.

678. RE-ENVISIONING THE SOCIAL ROBOT AS NON-ANTHROPOMORPHIC THROUGH A TRANSDISCIPLINARY LENS: THE ROBOT VIOLET.

Pat Treusch (Trinity College Dublin) Conor Mc Ginn (Trinity College Dublin)

The category of the social robot appears to be essential for our current socio-cultural imaginary of robots. Social robots populate robotic labs, social research and works of fiction. The work of Dautenhahn (1995) has been foundational for robots that are no longer regarded as mere instruments, but rather as interpersonal communicative agents (Breazeal et al. 2016, 1936). Robots are envisioned to become social partners in many

fields, ranging from industry to the private and the service sector (ibid.). The realization of communicative, intersubjective capacities is tied to an anthropomorphic design, including appearance, behavior and description. In HRI, critical strands towards the humanoid robot have gained momentum. They carve out how a humanoid design operates mostly with taken for granted social categories such as race, age and gender and thus are in danger of reproducing if not reinforcing stereotypes (e.g. Roesler et al 2022). This causes different problems on the level of ethics as much as usability that can be regarded as "'wicked problems', as they belong to "a class of social system problems that are ill formulated, confusing, and influenced by many factors." (McGinn 2020, 284). This proposal is based on the transdisciplinary work between a robotic engineer and feminist science and technology scholar. We will tackle the wicked problems by re-envisioning the social robot. This will be based on the evaluation of HRI experiments (conducted together) with the robot Violet (Akara). As a cleaning robot, Violet's design enhances functionality over anthropomorphic attributes. Violet is to be regarded as a social robot that exceeds the status of a mere instrument. We will study the relation between sociability and functionality given the example of Violet in order to deliver a taxonomy for HRI in social robots that does not rely on an anthropomorphic design.

798. TECHNOSEXUAL RELATIONSHIPS AND TECHNOSCIENTIFIC FUTURES OF CYBORG LOVE

Melike Sahinol (Orient-Institute)

There is a range of technosexual relationships, with diverse technosexual applications for different groups of people, be it queer people, people with disabilities, or even people with long-distance relationships. The latter area of use seems to have found favor especially in times of isolation in the pandemic. Making cyborg love means having a technosexual interconnectedness, a get together of flesh and technology, either with a living partner who is physically unavailable, or using these technologies as an erotic sexual practice with inorganic partners. The market holds not only teledildonic sex toys but also robots with sexual assistance function, developed with converging technologies, equipped with Artificial Intelligence. These robots belong also to service or assistance robots, which are used for health and care support. Such assistance robots are being developed primarily in California and Japan. Hyperconnectivity, virtual and teledildonic components are undoubtedly part of the sex robots on the rise. Therefore, the use of these robots also depends on these components. According to a report by „Future of Sex" (2020), while over a quarter of young people will have had remote sex / long-distance sexual experiences, by 2028, by 2045, one in ten young adults will have had sex with a humanoid robot. Based on such future claims and my analysis of teledildonic interactive sex toys allowing couples to have sex in long distance relationships, I will illustrate under which contemporary relations such technoscientific futures have to be seen in the context of cyborg love.
The focus is to show the adaptation of the human body to machinic offers in the sexual field - and vice versa. It is highlighted that technoscientific futures of cyborg love are shaped by notions that do not sufficiently take into account diverse socio-bio-technical constellations and therefore may favor a simplistic development of sex robots.

Room N118 - Panel 019. RESPONSIBLE RESEARCH ASSESSMENT AND STS.

Session 2

693. OPEN SCIENCE AS A MEANS OF RESPONSIBILITY IN THE RESEARCH SYSTEM: OPPORTUNITIES AND CHALLENGES

Clare Shelley-Egan (Technical University of Denmark - DTU)

Open Science (OS) is becoming an increasingly important part of the research endeavour and has received increased attention from funders, publishers, institutions and individual scientists over the last decade or so. Open Science reflects a research culture reform agenda that aims to open up the whole cycle of doing research, thereby aiming to transform scientific practice and de facto forms of assessment. While there are many initiatives and policies in place to advance the Open Science ambition, there is little clarity about how to implement - or even integrate - OS as a core approach or activity in research organizations (Levin et al., 2016). This is clearly a challenge for the diversification of research assessments to take account of research activities such as open access publishing. This contribution addresses this challenge, building on two strands. First, the paper zooms in on issues of OS implementation, drawing on data generated in the Horizon 2020 RRI-Practice project to empirically document and reflect on the implementation of Open Access (OA) practices in select research performing and research funding organizations in Europe and outside of Europe. Second, the paper zooms back out to consider OS as a larger project underpinned by political drivers, a diversity of stakes and stakeholders, and issues of 'doability' at both cultural and individual levels. It concludes by drawing together the two strands to offer reflections and recommendations regarding the feasibility of Open Science initiatives and activities to advance the cause of responsible research (cf. Owen et al., 2019) and related assessments.

581. HOW TO SORT JOURNALS OUT? A STUDY ON PROLIFERATION OF SCIENTIFIC JOURNAL LISTS IN CHINA

Jing Wang (Institute for Science in Society, Radboud University) Willem Halffman (Institute for Science in Society, Radboud University)

Journal lists are widely established in the assessment of academic journals' quality and impact. They express quality in simplified levels, or set up dichotomic categories in blacklists and whitelists. A wide range of actors all over the world have set up such journal lists for a variety of purposes, related to their specific institutional contexts. Examples range from lists of predatory journals, such as the notorious Beall list, to the commercially provided Cabell's list of predatory journals, to national lists used in research policy, or university lists used in research management.
Similar journal lists are proliferating quickly in China, in specific concerns of current Chinese science policy and research evaluation. This paper specifies two kinds of journal list-building in Chinese science: 'qualify' or 'disqualify' journals. The empirical investigations shed light on the profound implications underlying different regimes of journal valuation and indicate the bureaucratic governance logic in the Chinese publication system. We aim to advance understanding of journal-list construction and uses from a broader social-economic setting, particularly in the Chinese science context.

1037. RESPONSIBLE RESEARCH TOWARDS A ZERO PESTICIDES FUTURE - FROM RESEARCH EXPECTATIONS TO RESPONSIBILISATION IN REAL-TIME

van Dis Renée (French National Research Institute for Agriculture, Food and Environment (INRAE)

Since World War II, pesticide applications in agricultural systems have tremendously augmented with the aim to increase food production. This intensification is causing societal challenges, such as negative impacts on the environment and on human health. The French Government is making a concerted effort to achieve a zero-pesticides agricultural future by its significant investment in the national Priority Research Program 'growing and protecting crops differently' (PPR-CPA). It's a multi-year mission-oriented research program which aims to contribute to a 'pesticide-free' agriculture by 2040. By integrating the ASIRPA Real-Time impact assessment into the 10 funded research projects of the PPR-CPA, the French Ministry of Higher Education, Research and Innovation hopes to ensure their responsibilisation towards societal impacts. To date, there is an antiquated understanding of how research activities might contribute to the societal transformations that are required to make the desired impacts. New, responsible ways of conducting research and imagining its transformative capacity are needed. Building upon the body of literature on Responsible Research and Innovation (RRI), this paper aims to better understand the performativity of responsible research towards transformative societal change. The paper explores how envisioning futures in real-time contributes to responsibilising research, by studying the performativity of RRI in practice bundles. It presents a conceptual framework that draws upon the four dimensions of RRI by Owen, Macnaghten, and Stilgoe (2012), the Sociology of Expectations and Practice Theory. The study follows the ASIRPA Real-Time (RT) impact assessment activities in the PPR-CPA research projects and explores

the responsibilisation of research over time. The research is based on a situational analysis over three periods of time: 1) the proposal writing phase; 2) at the start of the ASIRPA RT activities; 3) after the first round of the ASIRPA RT activities. Data is collected through research proposals, semi-structured interviews, and project workshops.

Room N108 - Panel 029 INFRASTRUCTURES OF WELFARE

Session 2

954. PUBLIC PERCEPTIONS OF THE AUTOMATION OF WELFARE

Helen Kennedy (University of Sheffield) Susan Oman (University of Sheffield) Hannah Ditchfield (University of Sheffield) Mark Taylor (University of Sheffield) Jo Bates (University of Sheffield)

How are members of the public responding to the automation of welfare? Living With Data explored different people's thoughts and feelings about the ways in which automation and datafication are transforming the public services that they encounter as part of their everyday lives. In this paper, we present three findings about public perceptions of apparently mundane automated processes within welfare provision which relate to identity verification, which reveal complex views beneath the surface of apparent acceptance of such processes. First, we found that some aspects of these processes concerned participants, especially those that might reinforce or lead to inequalities. Participants were not comfortable with the possibility that some groups of people might not be able to confirm their identities online because of their unusual residence histories or otherwise complicated lives, or that such people might have their access to welfare delayed by the introduction of new forms of online identity verification. Second, extra checks designed to enhance security, such as checking whether the same device is consistently used on log into accounts, whether people log in at similar times each day, whether the rhythm that the password is typed is consistent and whether the phone is swiped in a consistent pattern, were perceived as 'creepy', even if participants appreciate the reasons behind them. Third, we found that people come to understand abstract phenomena like automation through imagining possible future applications, especially what might go wrong, even when actual existing processes are made transparent to them. We conclude by reflecting on what our findings tell us about the complicated interplay of understanding, knowledge, awareness and attitudes, and why these matter for infrastructures of welfare.

881. TOWARDS "IDEAL PES" FROM THE VIEW OF GRASSROOT ORGANISATIONS

Sonja Mei Wang (Technische Universität Berlin) Kristen Scott (Katholieke Universiteit Leuven) Bettina Berendt (Technische Universität Berlin) Milagros Miceli (Technische Universität Berlin) Margarita Artemenko (Humboldt-Universität zu Berlin)

Algorithmic and data-driven profiling systems have been introduced to assist Public Employment Services (PES) in several countries in the European Union. Their deployment has received criticism and while some of these systems have been discontinued, new systems are currently being developed. In Germany, profiling is the first phase of the 4-Phase Model, a binding concept for the provision of services to jobseekers. The outcome of the profiling, which is primarily caseworker-based, indicates the jobseekers' proximity or distance to the labour market within six months. Based on the outcome, employment counsellors use their discretion to choose services and measures for the jobseeker. In our previous research, we have applied Participatory Design methods with migrant jobseekers and given recommendations on how profiling could be designed to account for their desiderata. To continue with this line of research, we will investigate the perspectives of employees of grassroots organizations that fill an advocacy and support role for unemployed migrants. We probe these perspectives using two specific methods. During semi-structured interviews, we focus on their experience with profiling of jobseekers in the German PES with administrative and social work practises and skills they utilise in relation to it. Specifically, interviews focus on what they observe as the realities of the current profiling process in Germany and what they view as their own role in helping job seekers navigate the existing PES system. These interviews then inform a design fiction exercise to explore the same group of interviewees' perspective on existing and imagined algorithmic and data-driven approaches to profiling in PES, with a focus on eliciting their views on how increased automation may impact their roles as advocates, including their practises and skills. We also seek to understand what they see as an "ideal" approach for PES in Germany to take to decision-making and service provision.

880. DREAMING UP THE CYBORG-CITIZEN-CONSUMER

Santeri Räisänen (Centre for Consumer Society Research, University of Helsinki)

The Nordic model of wide-cast state-funded welfare safety nets is said to be under threat; undermined by a crisis in public finances and an inverting population pyramid, public welfare service provision has been under pressure to seek efficiency through digitalisation, especially through e-service portals and automated decision-making. In Finland, the National Artificial Intelligence Programme seeks to invert this logic: rather than creating efficiency in production, it aims for efficiency in consumption, turning digital infrastructure away from the state bureaucracy, and towards the citizen themself.
In this paper, I analyse the image of the user manifest in the "How am I doing?" service, a system for AI based personal welfare recommendations designed by the Finnish Ministry of Finance, under the auspices of the national AI programme. Based on a close-reading of design documents and research interviews with planners, I argue that the to-be built technical infrastructure is constructed around a hybrid subject, that of the Cyborg-Citizen-

Consumer: an inadequately self-responsible welfare subject, whose consumption can be algorithmically augmented towards efficiency. The manifested Cyborg-Citizen-Consumer proposes new relations of intimacy and control between individuals, information systems and state bureaucracy. At the same time, by situating the hybrid subject in two cultural and political shifts of the last century, namely cybernetics and citizen-consumption, I make visible the historical entanglement of an imagined technopolitical future.

110. DATA DIALOGUES IN SOCIAL WELFARE

Margot Kersing (Erasmus University Rotterdam) Liesbet van Zoonen (Erasmus University Rotterdam) Lieke Oldenhof (Erasmus University Rotterdam) Kim Putters (Erasmus University Rotterdam)

Researchers, policy experts, and civil rights groups have voiced concerns that the use of data-driven tools in the domain of social welfare are being deployed without adequate consideration of potential harms for welfare service users (Brown et al., 2019, Eubanks, 2018, Maki, 2011, Pleace, 2007, Bon, et al., 2020). Despite these concerns there are few empirical studies with the experiences and wishes of welfare service users concerning data-driven welfare provision as a central focus (Van Zoonen, 2020, Hansen et al., 2018, Brown et al., 2019). Therefore, we pose the following research question:
What is the perspective of welfare service users on data-driven welfare provision in the domain of work and income?
To answer this question, we organize data dialogues with clients in the municipalities of Rotterdam, The Hague, and Amsterdam since they use data-driven tools in their departments of Work and Income. The assumption is that through data-driven work service provision will improve and more clients will find a job. In these data dialogues clients will first play a database-game about pseudonymization, after which there will be a round of conversations about privacy, transparency, and control over your own data.
During these data dialogues we will explore (1) what their experiences and wishes are concerning data-driven welfare provision, (2) what the opportunities and risks of data-driven welfare provision are according to clients, and (3) what conditions the municipality must meet to deal with data-driven tools responsibly.
At present we've done a number of pilot data dialogues from which the suggestion arises that transparency about the content and goal of registered data, as well as who has access to their data and why, is more important to clients than privacy since the municipality already has extensive information about them. In this research we expect to elaborate and enrich these provisional findings.

368. WHEN A HUMAN SAYS "NO" TO A COMPUTER: FRONTLINE OVERSIGHT OF THE PROFILING ALGORITHM IN PUBLIC EMPLOYMENT SERVICES IN POLAND

Karolina Sztandar-Sztanderska (University of Warsaw) Marianna Zieleńska (University of Warsaw)

Based on the case study of profiling algorithm implemented in local Public Employment Services in Poland, the article analyzes frontline oversight over the automated decision-making system (ADM). Putting humans in the decision-making loop is considered an accountability mechanism in a digital welfare state. Using evidence coming from interviews, documents, and statistics, the article takes a closer look at whether and why – despite critical attitude towards the algorithm – street-level bureaucrats were reluctant to say "no" to a computer. Research indicates that the reluctance to override automatic results at street-level is a context-dependent phenomenon, in which policy and organizational factors play a role, alongside invisible discretionary practices of working around ADM without overtly correcting it.

Room N107 - Panel 036 CARE-FUL DATAFIED FUTURES AND TECHNOPOLITICS OF CARE

Session 2

64. THE SOCIAL LIFE OF BIOMEDICAL DATA: CAPTURING, OBSCURING, AND ENVISIONING CARE IN THE DIGITAL SAFETY-NET

Taylor Cruz (California State University, Fullerton)

Biomedical investment in digital technologies has flooded society with staggering volumes of data, spurring high-tech innovations such as performance metrics, clinical algorithms, and public data dashboards. In examining the social life of data artifacts, scholars draw from actor-network theory to emphasize data's ability to represent social reality while circulating within it, while others suggest formal data models fail to account for invisible relations on the ground. Yet little work has examined the role of human reflexivity in crafting complex human-data configurations in practice, such as how situated human actors relate to data representations within the social reality they intimately know themselves. Drawing on ethnographic fieldwork of Electronic Health Records (EHRs) and data analytics integration from inside the digital safety-net, this article shows how health care workers recognize data simultaneously capture, obscure, and envision their everyday work of caring for the marginalized. By demonstrating how the same data point may in one context demonstrate good care while in another obscure it, these findings suggest need to broaden attention to the social life of data beyond delimited focus on standards and their travels. Digital technologies do not simply capture the social, but multiply it. Biomedical data then do not have one social life, but many.

907. SENSING AND CARING WITH DATA: "GETTING A FEEL" FOR ICU PATIENTS THROUGH DATA

Horn Carsten (Department of Science and Technology Studies, University of Vienna) Bühler Timo (Department of Science and Technology Studies, University of Vienna) Felt Ulrike (Department of Science and Technology Studies, University of Vienna) Scheriau Michaela (Department of Science and Technology Studies, University of Vienna)

The emergence of digital technologies has gone hand in hand with the large-scale collection of sensor data and has shifted related practices of sense making. This has been researched in relation to practices of self-tracking, environmental sensing and, on a conceptual level, in relation to sensing practices and the post-humanist becoming with data. How data is sensed in professional contexts has so far less been a topic of research.
In our talk we will draw on observation and interview data gathered in the course of the research project "ICU4Covid" funded by the EU-Commission (101016000) that aims to introduce telemedical solutions to ICUs across Europe. This led us to engage with ICUs in diverse hospitals in different European countries and with the ways data figure in this professional space. The Intensive Care Unit (ICU) is a very good case to shed light on this: Not only has data been at the center of intensive care medicine long before the contemporary "datafication of health" (Ruckenstein & Schüll, 2017) but data in different forms is the primary way of knowing and caring for ICU patients. We ask how medical professionals, doctors and nurses, sense patients' data bodies in different ways and through different sensoria, for instance large spreadsheets and charts, visual representations of patient trajectories and alarms that constitute the soundscape of the ICU. We will shed light on the competences that medical professionals have to develop to make sense of these diverse sets of data and to "get a feel" (Harris, 2021) for the patient through data, but also on what is potentially lost through new ways of perceiving the patient in the ICU.

978. CAREFUL PRACTICES OR SIMULATIONS OF CARE?

Waltraud Ernst (Johannes Kepler University Linz)

Participation in medical research has been discussed heatedly since the feminist self-help movement of the 1970s. These careful practices of knowledge-sharing among lay people challenged the patriarchal and increasingly profit-driven medical profession (Murphy 2015). As Murphy also showed, who gets empowered, who is cared for and who is excluded from profiting has to be scrutinized in complex global entanglements. Also, questions of whose data are relevant for the development of medical products, who is considered to represent all humans or specific humans and who is perceived as reliable test subject for medical trials, are rather complicated (Epstein 2003). Moreover, it has to be reflected that the right to take part may not always be considered as equally important as the right for "informed refusal" (Benjamin 2016).
To continue this discussion seems important when data of human bodies have become a highly valued currency not only for medical care but also for big technoscience business. Today, with Artificial Intelligence as the promise for technical solutions for social and medical problems, the access to valid data on a voluntarily basis has become an urgency. What are the technopolitics of care involved?
In the paper, these questions are discussed with the example of diagnostic accuracy of breast cancer. An abundance of breast cancer screening data is needed to train algorithms to make the promise of AI come true to

detect breast cancer “even better” than medical personnel (Nature 577, 2020). Although there are debates about the efficiency of mammography, especially because of many false positive and false negative diagnosis, women are urged by big campaigns to donate their screening data as a measure of solidarity. Is this an example for care-less datafication processes or care-ful datafied futures? What has to be considered?

18. DIGITAL HEALTH GOVERNANCE: A SOCIOMATERIAL FRAMEWORK

Benjamin Marent (University of Sussex) Flis Henwood (University of Brighton)

The notion of digital health often remains an empty signifier, employed strategically for a vast array of demands to attract investments and legitimise reforms. Rather scarce are attempts to develop digital health towards an analytic notion that provides avenues either for understanding and/or for governing such ongoing transformations in healthcare. This presentation elaborates a sociomaterial framework for digital health governance. It first outlines a sociomaterial approach to understanding digital health, showing how digitalisation affords practices of health and medicine to handle the combined and interrelated challenges of increases in quantification (data-intensive medicine), varieties of connectivity (telemedicine), and unprecedented modes of instantaneous calculation (algorithmic medicine). This enables an engagement with questions about what forms of knowledge, relationships and control are produced through certain manifestations of digital health. The presentation then sets out, in detail, an innovative digital health governance framework that can guide explorations and negotiations into the type of care we want to achieve through digital transformation. The framework embeds Karen Barad’s concept of agential cuts suggesting that responsible cuts towards the materialisation of digital health require participatory efforts that recognise the affordances and the generativity of technology developments. Such governance strategies can lay the foundations to reorient and sensitise innovation and care processes in order to create new possibilities and value-centric approaches for promoting health in digital societies as opposed to promoting digital health per se.

812. POTENTIALS AND PRECARITIES WITH UNCERTIFIED AND CERTIFIED EDEVICES IN EPILEPSY CARE

Frederike Fahse (Zealand University Hospital) Henriette Langstrup (University of Copenhagen)

In recent years, there has been a great increase of consumer-oriented and clinically certified health technologies available and these have become an integral part of national health care strategies in most European countries, including in Denmark and Germany. This is also the case in epilepsy, where eDevices have found their way into the lives of patients, transforming both treatment and care practices.
eDevices such as wearables and apps offer arrangements in which both patients, their relatives and health professionals in principle can respond more adequately to care needs with the help of real-time data and advanced data analytics. What might be less clear is how to ensure that new digitally enabled care arrangements provide people living with the precariousness of chronic illnesses and technology with response-able care (Lomborg et al. 2020). eDevices do more that offer data exchange – they also transform relations, impact everyday life, and may transform what we in the first place see as care. People with chronic illnesses and their caregivers thus navigate in a field full of technological opportunities and new precarities.
Denmark has been a frontrunner in the digitalization of the public health sector for many years, while digitalization processes have been slower in Germany. In this paper, we will share preliminary results from a comparative ethnography in Denmark and Germany exploring how certified and uncertified eDevices become part of and transform epilepsy (self-) care in the two countries. How do people with epilepsy and their caregivers navigate the many technological choices, possibilities and precarities within different health systems and different degrees of digitalization? We will discuss how concepts from feminist STS and critical data studies may help us imagine more response-able chronic care infrastructures in Europe and beyond.

Room N113 - Panel 043. FUTURES OF ARTIFICIAL INTELLIGENCE IN MEDICAL IMAGING

Session 2

383. MEDICAL IMAGING IN RADIOLOGY AND DERMATOLOGY: HOW SCIENTISTS PERCEIVE THE SOCIAL IMPLICATIONS OF IMAGING MACHINE LEARNING HEALTHCARE APPLICATIONS

Theresa Willem (Technical University of Munich, School of Social Sciences and Technology, Department of Science, Technology and Society (STS) & Technical University of Munich, Germany; School of Medicine, Institute of History and Ethics in Medicine) Alena Buyx (Technical University of Munich, Germany; School of Medicine, Institute of History and Ethics in Medicine)

Understanding the social implications of machine learning in healthcare has become vitally important for policy makers, healthcare professionals, computer scientists, and potential patients alike. However, until real world application can provide insights, the perspectives of those who work with and develop such technologies have become an important source for the estimation of the potential effects for patients, healthcare professionals, and society. We inductively explored what sorts of social issues scientists who work on imaging machine learning healthcare applications raise, and how they account for their own agency and moral responsibility in the development process. For our analysis we drew on interviews with twelve scientists from the medical machine learning fields of dermatology and radiology. They included computer scientists, clinical data scientists, and clinicians. We juxtaposed the team members' opinions to gain insights into to what extent their utterances might be connected to the domain they work in, and located the assumed implications in the public discourse. We found that many of the uttered risks posed by the technology developed in the project are congruent but of varying intensity across the disciplines. However, some topics – especially those that are comparatively new to the discourse, e.g., ecological implications of the developed technology – are perceived very differently among the members of the various disciplines. Our analysis also revealed gaps, such as questions about responsibility for patient outcomes, that need to be overcome when machine learning applications are to be translated into clinical practice.

278. WORKING WITH AI? JURISDICTIONAL CONTROL AND SOCIO-PROFESSIONAL ISSUES IN RADIOLOGY

Mignot Léo (Université de Bordeaux)

The rise of AI in medicine has undoubtedly been the subject of many fantasies and exaggerated announcements – such as Geoffrey Hinton's prophecy that AI will replace radiologists. Nevertheless, AI advances are not just a vague promise: applications to radiology are already taking shape, and various AI solutions are commercialized. This is the case in oncology imaging for tumour detection, contouring of targets or in recent developments in radiomics. This field, therefore, seems appropriate to examine the conditions of emergence of AI in healthcare and identify the social and epistemic effects of its implementation.
More specifically, we propose to focus on AI computer-aided diagnosis (CAD) systems. These tools appeared in the 80s-90s for mammographic screening and were gradually abandoned by radiologists because of a high rate of false positives. Today, they are experiencing a massive revival with the development of deep learning.
The history of these devices allows us to highlight the challenges of AI adoption and the "normative work" required to match these tools to professional expectations. We propose to examine the socio-professional transformations at work within and outside radiology regarding: 1/ jurisdictional claims between medical specialties; 2/ the internal organization of radiology and the division of tasks (between radiologists and radiographers).
From the results obtained through the analysis of messages on social networks (twitter) and interviews (n>35) with radiologists and members of the medical industry, we will determine the effects of the implementation of AI on the redefinition of expertise within the field of radiology.

945. ARTIFICIAL INTELLIGENCE IN PROSTATE CANCER DIAGNOSTICS: TRANSDISCIPLINARY COLLABORATION IN A NORWEGIAN BIOTECHNOLOGY PROJECT

Maria Bårdsen Hesjedal (Norwegian University of Science and Technology)

Artificial Intelligence (AI) based on machine learning algorithms is increasingly used and promoted in medical diagnosis and prognosis in health care. Prostate cancer research is one area where machine learning in radiology is imagined to improve diagnostics. Prostate cancer is the most common cancer type amongst men in Norway, and is commonly diagnosed with invasive methods. Existing research suggests a need for improved patient management in prostate cancer, both in terms of detection of the disease and differentiation between low-risk and high-risk disease to ensure correct treatment.

In this paper, I study a biotechnology project that aims to develop an AI system to support prostate cancer diagnostics (project D). Project D is a transdisciplinary research project performed by natural scientists, from different disciplines (working with MRI, pattern recognition and machine learning), social scientists, and a user panel. The project participants are divided into different, interdependent work packages that are responsible for particular parts of the research process.
I investigate if and how the integration of AI influences the collaboration in project D. The AI systems developed for identifying prostate cancer are typically designed to give a yes/no answer without providing insight into the decision-making process, whereas clinicians need to understand, interpret, and trust these decisions before they can be communicated to their colleagues and patients. I shed light on the knowledge transfer between the scientists developing imaging diagnostics for prostate cancer and the clinicians using it in practice, asking: how is this work imagined by scientists and clinicians, and how is it enacted in practice? The paper is based on semi-structured interviews and participant observation in project D. It draws on Karin Knorr-Cetina's concept of epistemic machineries (1999) and practice theory (Shove et al. 2012) to explore how transdisciplinary research on AI and cancer are imagined and enacted in practice.

624. UNTANGLING VIEWS ON AUTOMATION IN BREAST CANCER SCREENING : BREAST RADIOLOGISTS' PERSPECTIVES ON THE EVERYDAY USE OF AI IN MAMMOGRAPHY SCREENING

Charlotte Högberg (Department of Technology and Society, Lund University, Sweden) Stefan Larsson (Department of Technology and Society, Lund University, Sweden) Kristina Lång (Department of Translational Medicine, Lund University, Sweden)

In the development of artificial intelligence for mammography screening, the hopes are to increase cancer detection, decrease false positives and ease the screen-reading work load for radiologists. By a sociomaterial understanding of relations between humans, technologies and infrastructures, we want to understand how medical professionals in the public health care sector navigate the automation of decision-making and decision-support. Our survey on Swedish breast radiologists shows that a majority are positive towards the use of AI in mammography screening, but also that there are frictions and uncertainties. A lingering question of uncertainty is whom should bear responsibility for the decision-making in mammography screening, if the screen-reading is fully or partially automated. Very few radiologists think that the screen-reading should be fully automated. At the current state of development, most would like to use AI as a replacement of one of two human readers or as an addition to standard double-reading. Still, our findings suggest that having AI as reading partner might entail a new type of interpretation work. While most would, to quite a high degree, trust classifications by AI-systems, many are uncertain about the trustworthiness of AI. Most consider that information regarding training data and development and visual explanations would be helpful in their trust assessment, whereas not as many would be helped by access to the algorithms. Our results show the importance of a situated and relational notion of AI transparency, as well as the significance of understanding the context specific ethical and social implications of AI implementation and thresholds to trust.

038. AI-BASED CLINICAL DECISION SUPPORT SYSTEMS: TWO SOCIOLOGICAL CASE STUDIES

Renate Baumgartner (Tübingen University) Kevin Wiggert (Berlin Technical University)

Artificial Intelligence (AI) is an emerging and contested topic in biomedical research and healthcare. In recent years especially one approach for AI support technique is being increasingly established: AI-based clinical decision support, ranging from giving recommendations in diagnosis, over treatment to aftercare. First approaches even promise to give support throughout the whole patient lifecycle. However, systems nowadays are mostly developed or used for specific purposes within one disease, e.g., lung cancer, cardiovascular diseases or HIV. While most of the support systems are still in the phase of development and clinical trial, first solutions are already made available to healthcare institutions. This includes online tools that suggest treatment regimes for HIV-positive people based on HI-viral DNA information.
Information generated by AI-based decision support systems is opaque in the process of its generation. It is not completely transparent and cannot be verified by the physician. This new way of generating information to support decisions is likely changing not only the ways of reasoning and decision-making of the medical expert but the whole sociotechnical constellation of medical diagnosis and treatment as well. As these systems are increasingly being manufactured and implemented, we see an urgency to pursue a critical sociological research of clinical decision support based on AI algorithms.
With our paper we want to contribute to a critical understanding of these systems. Therefore, in our talk we will give insights into our studies about practices of developing AI-based clinical decision support systems and implementing these systems into clinical workflows (A tool supporting treatment of cardiovascular diseases and HIV-treatment optimisation tools). Doing so we follow two aims: Firstly, we want to show, where in healthcare, and how systems giving AI-based decision support might shortly be playing a considerable role. Secondly, we would like to show sociology-informed ways of researching this topic.

Room N110 - Panel 046 GEOGRAPHY OF RESEARCH COLLABORATIONS AND COMMUNITIES

Session 2

639. THE ROSCOFF MARINE BIOLOGY STATION: A DRIVING RESEARCH SITE IN THE COORDINATION OF MULTI-SCALE NETWORKS

Marion Maisonobe (CNRS) Josselin Tallec (Université Grenoble Alpes) Bastien Bernela (Université de Poitiers)

The framework of Research Excellence policies in France favours the concentration of research funding on a few metropolitan sites. In this framework, metropolitan areas are said to be the main nodes of scientific networks, and small towns are said to be only satellites under the scientific influence of large cities. To discuss this view, we offer to examine the scientific influence of a small town: Roscoff (3,500 inhabitants located in the Brittany region), home to one of the oldest research laboratories in marine biology (created in 1872 and now employing nearly 300 researchers). Two scientific fields are present there: marine biology (through the study of macroalgae) and marine ecology (including the study of plankton and its relationship to marine ecosystems).
We show that the scientific research of the Roscoff marine biology station is embedded in different geographical scales and scientific worlds. In order to highlight the station's "places" in different scholarly communities and at different scales, we adopt a methodology combining fieldwork and spatial scientometrics. For the national level, we use data from the ANR and CNRS contract databases (indexing scientific projects), and for the European and international levels, publication data from the Web of Science.
These data are geographically processed to allow spatialization and mapping using the NETSCITY web application. Interviews with researchers at the station in 2020 and 2021 and focusses on scientists' trajectories enrich the observations made from scientometric data. Our research highlights the mechanisms, networks and trajectories that enable this small town to occupy an important and key position on the national and international maps of research in marine biology and ecology. This work allows to highlight not "a geography" of the research station's collaborations, but multiple "geographies", specific to the different fields of knowledge and different scholarly communities linked to the research station.

778. ALGAL CULTURES: CHOREOGRAPHIES OF SCOTTISH SEAWEED

Niki Vermeulen (Science, Technology and Innovation Studies (STIS), University of Edinburgh) Rob Smith (Science, Technology and Innovation Studies (STIS), University of Edinburgh)

Scotland is surrounded by seaweed. Historically, the algae growing in the country’s cool intertidal waters have provided humans with food, fertiliser, dye and medicine. Most Scots no longer eat seaweed but we are currently seeing a renewed interest. Continuous artistic and scientific engagements with seaweed are being supplemented with new exclusive and small-scale companies producing seaweed seasoning, crisps, cosmetics, supplements as well as kelp-infused gins and whiskies. Others are locating seaweeds in climatic terms, proposing them as a way to offset emissions produced on land. These, and other, larger-scale industrial uses are being proposed as a way of revitalising Scotland’s coastal economies, but some of these proposals have already given rise to public controversies, highlighting familiar tensions between nature’s preservation and use. In this talk, we trace the choreographies of seaweed, its spatial and temporal movements through Scotland and beyond. We document Scotland’s ‘algal cultures’ — the historic use of seaweed and its place in artisan, artistic and scientific practices — and map the contemporary R&D landscape and seaweed’s place within local and (inter)national policy environments. By conceptualising seaweed as a bio-object, we draw attention to this organism as a boundary crawler, inhabiting the intertidal zone while traversing different sectors, and with the potential to draw them into conversation with each other. As such, seaweed allows us to unpick the politics of different futures, pluralising terms like ‘the circular economy’ and making it possible to interrogate the connections between scale, sustainability and coastal communities’ climatic resilience.

620. EPIGENETICS IN MENTAL HEALTH RESEARCH: EMERGING CULTURES OF COLLABORATION AND THE POLITICS OF DEMARCATION

Georgia Samaras (STS Department, Technical University of Munich, TUM School School of Social Sciences and Technology) Ruth Müller (STS Department, Technical University of Munich, TUM School School of Social Sciences and Technology)

Mental health conditions represent one of the most significant burdens on the world as cases of severe depression and anxiety are rising. Treatment options, however, remain limited (Kessler et al., 2009). Against this background, researchers promote environmental epigenetics as providing promising molecular responses by improving the knowledge on and treatment of mental health conditions. By conceptually reconciling the nature/nurture dichotomy, STS scholars widely discuss epigenetics as allowing for interdisciplinary research between biomedicine and the social sciences (e.g., Meloni et al. 2016). However, less research has been done on how

epigenetics is affecting interdisciplinary dynamics within biomedicine itself. In our paper we therefore offer a close analysis of how different domains of knowledge are being remapped and converged within the mental health research landscape and which challenges emerge as a result. Through discourse analysis of scientific publications and qualitative interviews with key researchers, we analysis how the "placing" of epigenetics (Meyer and Hodgson 2016; Vermeulen, 2018) leads to interdisciplinary collaboration on the one hand, and territorial attitudes on the other hand. To that end, we first trace how epigenetics moves from the periphery to the centre of research in psychiatry, both in basic research with model organisms and in clinical research with human material. Second, we demonstrate how epigenetics enables international and interdisciplinary connections between these two domains of knowledge, serving as an arena for synthesizing knowledge claims. Third, contrasting this emerging culture of collaborating, we identify tensions materialising what we propose as "politics of demarcation" between basic and clinical researchers: how should epigenetics be appropriately researched and interpreted as a novel body of knowledge to become clinically meaningful and to lend credibility to psychiatric research? With our paper, we therefore contribute to STS literature aimed at exploring how research collaborations and communities converge with emerging forms of knowledge.

50. DISENTANGLING THE LOCAL CONTEXT – IMAGINED COMMUNITIES AND RESEARCH INTEGRITY POLICIES

Serge P.J.M. Horbach (Aarhus University) Mads P. Sørensen (Aarhus University)

With research becoming increasingly international while at the same time still embedded in geographically specific institutions, the concept of the relevant context for implementing research policies becomes blurred. There is still consensus about the importance of aligning policies to the local context for a successful implementation, but there seems to lack a systematic reflection on what the local context means in contemporary research.
Taking research integrity (RI) policies as a case study, we set out to examine how we can understand the relevant local context in contemporary research. We argue that although we have to consider institutional and national characteristics when implementing RI policies, disciplinary or epistemic communities are equally important. These communities are not bound to organizational models, geographical localities, or physical places. Instead, they cut across time and space – and are formed by historical and transnational research practices.
We propose a conceptual framework for understanding researchers' local context relating to RI policies. Studying the formation of 'local communities' in science, we aim to carve out the relevant dimensions that characterize such communities, building on Beck's work on cosmopolitanism, Durkheim's theory of solidarity and other relevant theories. Combining these frames, we argue that researchers' imagined communities (Anderson) are the most relevant way to understand locality.
Subsequently, we examine this model with data from the International Research Integrity Survey (IRIS) carried out in the SOPs4RI project among more than 65,000 researchers. The survey asked participants about their perception of local context and researcher identity. The results indicate an entanglement of belonging to both geographical or institutional locality as well as epistemic and infrastructural locality, with an emphasis on the latter, but with disciplinary and national variations.

688. ALWAYS SOMEWHERE, BUT NOT JUST ANYWHERE. ON THE POLITICS OF SPATIAL APPROACHES IN ST(I)S.

Jorrit Smit (Erasmus University Rotterdam)

Place matters in science, technology and innovation – even after the surge of information technologies promised to dissolve distance. Historically, different geographical and architectural concepts, metaphors and models have been used by historians, STS and innovation scholars to capture the different ways in which research is intricately spatial. In most cases, this implied a criticism of the 'modern' placeless view of science, suggesting a situated and contextualized understanding of scientific practices in its place. Still, the focus in this literature tends to be limited to 'scientific boundaries' (communication between dispersed specialists) or, in innovation studies, scientific practices get reified into commodifiable knowledge. At the same time, the political economy of different spatialities of research often remains underemphasized. In this reflective paper, I will probe the potential of different spatial STIS approaches to bring into view the politics of (policies for) relations between scientific and societal practices. What does the where of scientific research tell us about its usefulness? I approach this question by situating concepts from history of science, STS and innovation studies that emerged towards the end of the twentieth century. After touching upon the 'spatial turn' that rediscovered the construction of knowledge in specific locales, I move to the attention for circulation, travel and transfer of science as shown both in actor-network theory, history of science and anthropology. The topological approach of John Law & Annemarie Mol appears as a synthesis of these developments. Around the same time, while clusters of science and industry spread over the globe, a 'proximity school' emerged that took seriously the geography of innovation. And since the turn of the century, the ecological concept of ecosystem has become prominent in science and innovation policy. This analytic overview will prompt, in turn, a reflexive debate about the political economy of geographical approaches in STS.

Room N117 - Panel 048 TRANSDISCIPLINARY RESEARCH: HOW TO STAY WITH THE TROUBLE AND ENABLE CO-LEARNING?

Session 2

90. PUTTING IMPACT ORIENTATION INTO PRACTICE: LESSONS FROM A CASE-STUDY BASED DEVELOPMENT OF A TOOL TO REFLECT THE SOCIETAL EFFECTS OF TRANSDISCIPLINARY RESEARCH

Kny Josefa (Center for Technology and Society, Technische Universität Berlin) Schäfer Martina (Center for Technology and Society, Technische Universität Berlin)

In face of pressing societal challenges such as climate change, food security or bio-technological risks, the main goal of transdisciplinary research is to contribute to the solution of 'real-world' problems by integrating different knowledges and, thus, to achieve societal impact (Lang et al. 2012). Researchers who engage in this research mode are often as dedicated to this mission as they are overwhelmed by the challenges faced in practice. Especially keeping up a continuous impact orientation during the research process as well as tracing and assessing achieved impact remains a challenge (Lux et al. 2019). Thus far, very few tools, which can be integrated easily in the transdisciplinary research process, have been developed to enable systematic reflection and monitoring of societal effects.
In an iterative case-study based process, we have developed and continuously improved a manageable tool based on a heuristics of effect categories such as network formation, learning or structural effects (Schäfer et al. 2021). It combines several methodical elements such as 'Theory of Change' and actor analysis to enable an easily accessible, regular reflection of societal effects within transdisciplinary research teams, involving both scientists and practitioners. It can be carried out ex-ante to anticipate impacts, during the research process for its monitoring and adaptation as well as ex-post as participatory evaluation tool. We found that its successful integration in research processes depends on several criteria such as clear responsibilities as well as ownership for the joint process, timing and team constellations. For example, we have found it to be especially effective in transdisciplinary research teams including engineers and natural scientists from both academia and practice contexts. Hence, we see this set of methods as a feasible approach to be fed into the discourse on transdisciplinary practices in STS studies.

557. INTERACTIVE DEXTERITY – COMPETENCES FOR TRANSDISCIPLINARY RESEARCH

Silvio Suckow (Berlin Social Science Center) (WZB)

Drawing from 45 expert interviews from 2018 to 2021 with researchers and science managers at inter- and transdisciplinary centres for digitalisation research in Germany (Weizenbaum Institute), USA (Berkman Klein Center), the United Kingdom (Oxford Internet Institute) and Israel (Blavatnik ICRC), the proposed concept of "Interactive Dexterity" shows how experts can navigate the swampland between science and politics. For example, the Weizenbaum Institute is a unique project network of five universities and two research institutes with political expectations from the german government to provide useful evidence for the management of the digital transformation. While getting 50 mio. € funding for five years and establishing as an excellent interdisciplinary research institute, the evaluation of the Federal Ministry of Education and Research in Germany stresses the need for successful 'knowledge transfer'. With more than 50 PhD candidates and 17 research group leaders a diverse first cohort of researchers at the Weizenbaum was followed for 4 years with participatory observations and background conversations. First this paper shows how scientists develop interactional expertise (Collins / Evans 2010) and distributed agency in building 'interdisciplinary knowledge'. In addition to this an array of interactive skills is developed to bridge differentiated systems of society like science and politics. Ranging from means of science communication, political consulting to creating or being responsible for public data projects. The findings suggest these new facets in expertise formation are resulting from the extensive will of funding agencies to promote inter- and transdisciplinary research settings. However, the expert interviews also revealed both, the career logics of the science system and political stakeholders, aren't ready yet to systematically and constantly make use of these skills.

1026. TRANSFORMATION THROUGH TRANSDISCIPLINARITY – ABOUT WHAT HAPPENS WHEN YOU TRY AND WHAT'S TRYING ABOUT ITS HAPPENING

Callum Gunn (Athena Institute, Vrije Universiteit Amsterdam) Kris Kok (Athena Institute, Vrije Universiteit Amsterdam) Barbara Regeer (Athena Institute, Vrije Universiteit Amsterdam) Jacqueline Broerse (Athena Institute, Vrije Universiteit Amsterdam) Pim Klaassen (Athena Institute, Vrije Universiteit Amsterdam)

Today, transdisciplinarity enjoys a more prominent share of discourse across various science, technology and society fields than it ever has in the past. In STS and beyond, it is now easier to come across funding calls, project descriptions, and job advertisements that reference transdisciplinary research (TDR), conventionally for its promises to contribute to much-needed societal impact.
The early 2000's saw the growth of a research community focused on establishing and building capacity for TDR as a distinct scientific field. Most first efforts were focused on sustainability research, but by now TDR principles are applied much more widely, to different (sub-) disciplines and fields, including (public) health and social work. As such, more (early career) scholars are increasingly becoming acquainted with or enrolled in TDR.
Notwithstanding the availability of methodological resources, researchers 'doing TDR' in different places are concerned with what to expect of TDR, as it is characterised by uncertain processes and emergent outcomes. The scholarly literature about TDR mostly revolves around its "how-to's", raising pertinent concerns about intra-TDR power dynamics, systemic barriers to TDR, or obstacles for TDR to make impacts. Arguably, though, this happens at the cost of attention for the "what happens when", and associated reflection on what becomes of research practices within supposedly transdisciplinary processes.
We take up precisely this issue, drawing on Athena Institute's (VU Amsterdam) experience in doing TDR, and specifically Athena's (post)graduate TDR education programme. This spans many thematic fields and we will reflect on lessons pertinent for understanding transdisciplinary knowledge production and development, the relation of empirical and normative elements of research, and the scope of (societal) intervention within research practice. Reflections hereon are translated back to the context these lessons first arose from, as we discuss their meaning for early-career scientists and their learning needs.

274. COLLABORATIVE EXPERIMENTS BETWEEN DATA SCIENCE AND STS: ON MAPPING THE CONTINGENCIES OF AUTOMATED MISINFORMATION DETECTION

Andrés Domínguez Hernández (University of Bristol) Richard Owen (University of Bristol)

The growing online misinformation epidemic has sparked a wealth of machine learning (ML) techniques to combat the problem at scale. A large subset of these tools leverages the epistemic work of experts, professional journalism and fact-checkers to train ML classification models by taking their truth assessments at face value to curate authoritative 'ground truth' datasets. In this paper we ask whether and how STS sensibilities can intervene productively by problematising the algorithmic construction of (mis)information and concurrently helping to develop better algorithms. We report on a joint research endeavour between STS scholars and data scientists developing a machine learning model to automate fact-checking of online content. The collaboration was driven by a shared interest in promoting responsible practices in AI and contributing to wider cross-disciplinary efforts around understanding and tackling misinformation. The study was set up as a collaborative experiment where theory and qualitative analyses were brought in to both critique and inform the development of data-driven (quantitative) classification models. Grounded on a critical assessment of technical practices within the data science project and the 'state of the art', the research team co-produced a catalogue of contingencies associated with the steps in the construction of a model, as well as a list of normative recommendations and a research agenda with a focus on promoting the contestability of classification models and their datasets. We discuss some of the practical challenges faced by the research team particularly with respect to uncertainty about tangible outcomes and the frictions between recurrent acts of unpacking and making. We end by reflecting on how practitioners and researchers within STS and data science can learn from each other through open ended experimentation

856. WHAT KIND OF TRANSDISCIPLINARITY IS CO-CREATION? THE CASE OF EU ENERGY DEMAND RESEARCH PROGRAMMES

William Throndsen (Norwegian University of Science and Technology) Antti Silvast (Technical University of Denmark - DTU) Marianne Ryghaug (Norwegian University of Science and Technology)

Within STS, and particularly within energy-related Social Sciences and Humanities (SSH), researchers have argued for the need to include and incorporate more SSH contributions and in-depth SSH solutions within EU and national research programs and frameworks in order to meet climate targets and SDGs. This in turn has led to an increasing call for transdisciplinary research in funding call texts and in the expectations of research outcomes themselves. Transdisciplinarity is often identified not only as transcending disciplinary-based knowledge (Klein, 2010), but as a model by which non-academic 'stakeholders' (e.g. industries, publics, and policymakers) participate in the co-design of research (Winskel, 2018). One way these conditions manifest themselves in a practical sense is by co-creation increasingly becoming an institutionalized part of society-related research projects funded by the European Commission (Macq et al., 2020). In this context, SSH have been typically assigned with improving user engagement in technological projects. In this paper we analyze empirical data from the HORIZON 2020 SENDER project, which conducted several co-creation workshops within a dedicated co-creation Work Package designed to aid the development of technological solutions for smart energy management, particularly integrating insight from regular people about how these highly technical solutions should work in the household and everyday life. With the SENDER project as our case, we ask to what extent co-creation serves to facilitate for transdisciplinarity (not only to consumers, but various professionals) within such projects by describing how it is imagined on one hand and enacted in practice on the other. We examine how EU

framework integrated SSH scholars navigate their role as researcher–cum–co-creation facilitator. Finally, the paper thematizes how co-creation rarely fulfils all the expectations of different actors but can have small-scale transdisciplinary contributions within research project life that demand future attention.

Room N111 - Panel 056. BRINGING STS UP TO SPEED? THE DIGITAL AS PRACTICE

Session 2

124. TRIALS OF PATIENCE – ON THE ENDLESSNESS OF DIGITIZATION AS A SOCIAL PRACTICE

Anne Jordi Koppenburger (Human Technology Center, RWTH Aachen University)

To digitize is an extremely time-consuming social practice. Often, the development and implementation of digital information infrastructures as a complex and ongoing social process is lost sight of. In this talk, I present initial results from my examination of the formation of the electronic patient file in Germany. I shall argue that, firstly, the practice of digitizing certain objects and processes are inherently social activities. Secondly, digitizing as a social practice seems to be an ongoing, and partly rather slow activity of combining different temporal structures. Finally, I conclude that STS-oriented research should pay attention to even small decisions and minor steps of digitizing for the simple reason that the emergent information infrastructures are going to shape the ways of future knowing.
The legal requirement to introduce the electronic patient file is often justified with the prospect of accelerated communication and optimized coordination of the professional personnel in the health care system. In order to work out a dense description (Latour 1991) of the formation of the electronic patient file, I conceptualize it as a boundary infrastructure (Neumann/Star 1996). From this perspective, a broad range of involved social parties come into view. Moreover, salient conflicts among them can be traced back to often self-contradictory 'rationales' of their social worlds (Clarke/Star 2008). Since these ongoing negotiations are themselves restricted by regulation patterns and available technology they are conceived of as slowing down societal transformation and therefore are accused of causing economic disadvantages or worse, lost life years. Therefore, the case of developing and implementing the electronic patient file in Germany can teach an instructive lesson to STS-Scholars on how to examine and theorize protracted and layered development of digital information infrastructure which might become a central part of emerging knowledge infrastructures (Edwards 2010).

142. DATA FLIGHTS IN THE DRIVE FOR ONE DIGITAL HEALTH

Lucilla Barchetta (University Cà Foscari of Venice)

This paper draws from the author's experience as a member of the wider ERC project "HealthXCross", and in particular as an ethnographer in a multi-disciplinary research consortium whose main objective is to operationalise "One Health" (OH) principles and approaches in the study and management of health risks at the human-animal-ecosystems interface.
OH, big and open data have been hailed as powerful instruments in the drive for evidence-based science and the management of severe health and environmental problems, within and beyond digital data infrastructures. A common thread in the technoscientific optimism that permeates public and scientific debates is the idea of "disruptive transformation" that OH, big and open data carry with them. This idea intends to establish a break from the past and promise better knowledge, thus a better future, by speeding up data dissemination and prediction capacities.
The article's primary objective is to challenge the monolithic representation of the future that these narratives of acceleration convey. Using this ethnographic experience, as an illustration, the paper develops instead an anthropological perspective on how OH comes to be reconfigured as a computational object positioned within a breadth of conflictual, future affirmations.
In seeking to interrogate the co-production of futures as they emerge from OH's shifting, computational time-spaces, the purpose of this article is to show the paradoxes and contradictions that this rhetoric presents when we explore the relationality between technologies, data scientists' subjectivities, and data re-use practices in the making of one digital health.

843. CONCEPTUALIZING LIFE THROUGH ARTIFICIAL INTELLIGENCE. WHICH LIVES? WHOSE INTELLIGENCE?

Alicja Ostrowska (Chalmers University of Technology)

Space research, with its aim to explain our place in the universe, has the potential to be used as ratifying certain political orders as more natural than others. Conceptualizing what life is, in natural science, can legitimize which entities are perceived as worthy of legal protection and which can be sacrificed for the sake of others.
While the Copernican revolution had the potential to decentralize Earth in relation to the universe, the Darwinian evolution had the potential to decentralize humans in relation to other organisms. Yet, geocentrism and anthropocentrism prevail in science and politics. I argue that based on ethnography of the conceptualization of life in natural sciences - with focus on astrobiology, the field studying life and its origins on Earth and habitability in outer space - the political context it derives from and the consequences it leads to. Such order is reproduced

and maintained by the practice of what I refer to as cleaning, in both material and metaphorical sense. The practice of cleaning by purifying scientific data is intensified through automated technologies, such as artificial intelligence (AI). AI as a tool can facilitate space research and simultaneously reinforce current assumptions, inherent in the calibration of the tools. This poses a problem in the increasing acquisition of AI-technologies and the need for detection of anomalies, life as we do not know it.

757. "GEOLOGICAL DISORIENTATIONS": THE UNEXPECTED EFFECTS OF DIGITAL TECHNOLOGIES IN GEOLOGICAL FIELDWORK.

Martín Fonck (Institute For Advanced Sustainability Studies)

This work focuses on the unexpected effects of digital technologies in contemporary forms of scientific visualization. Based on ethnographic and historical material in iconic sites for producing scientific knowledge of geological faults in Chilean Andes, this presentation starts by showing the controversial use of digital technologies in the production of geological knowledge. It takes "geological disorientations" experienced by geologists during fieldwork as a conceptual opening to explore the algoritmization of scientific practices and the tension with traditional disciplinary skills in geological fieldwork. Examining practices of scientific visualization this work takes their challenges and consequences as a departure point to discuss unexpected effects of digital technologies under the planetary crisis.

Room N112 - Panel 065. NEW TECHNOLOGIES AND PUBLIC DEBATE. CHALLENGES AND OPPORTUNITIES

Cometta Mosè (University of Turin)

Recent years have shown the key role that new technologies are taking in the context of political life in general and in Western societies in particular. Their function as recording and communication devices makes it possible to channel an increasing amount of information and transform public debate. Thanks to this, new actors emerge, while political and cultural sensitivities evolve. In the context of this change, it is important to try to understand the role of new technologies: they may in fact represent both opportunities to favour the integration of actors hitherto excluded from the political process, but also risks of encouraging an increase in inequalities, discrimination and social violence.

This panel seeks papers that are interested in the role of new technologies in shaping public debate, with a focus on political and institutional issues. Questions such as the following are examples of issues that could be addressed: what technopolitical processes are developing? What social or institutional transformations could be achieved? How to channel technological potential in favour of and not against the democratic development of society? Which technologies can improve, deepen or make the public debate more inclusive? Is it appropriate for certain socio-political technologies to be developed by private or international actors?

All contributions are welcome, especially those encouraging an interdisciplinary approach and those suggesting new avenues of analysis.

Session 1

171. THE SUBSTITUTION OF FUEL DEPENDENT VEHICLES FOR ELECTRIC VEHICLES: APPLYING LESSONS FROM THE INTEGRATION OF THE TABLET COMPUTER INTO PRACTICES

Carolynne Lord (Lancaster University)

Ambitions to transition to renewable energy supplies have increased the significance of questions concerning the influence of new technologies on social practices.
How do new technologies rearrange and reconfigure practices? And how do practices integrate new technologies?
One way to answer these questions is to consider previous cases in which new ‘things’ have been integrated into practices. The tablet computer offers one example of this, representing a case in which one material was intended to substitute others (e.g., laptop, desktop, smartphones).
Drawing on semi-structured interviews with younger and older cohorts, I demonstrate some of the practice dimensions which fluctuate and are modified in response to the arrival of the tablet.
What this shows is that embedding is not a one-off or closed development in practices: there is no simple substitution of one technology for another. Instead, integrating is an ongoing, and flexible process that occurs across practice dimensions
Stepping back, I then make comparisons between this case and that of electric vehicles. Whilst this intended transition is, again, positioned as a moment of substitution, I argue here that wider adaptations and fluctuations are required in preparation for its integration into social practices.
In doing this, this presentation challenges established debates around embedding, and discussions around substitution and electric vehicles, demonstrating how these reify current levels of ‘need’ and demand, rather than acknowledging the wider scale changes required for net-zero transitions.

618. CLIMATE FIXES: A TECHNO-MARKET FRAMEWORK UNDERLIES PUBLIC CONTROVERSY AND STIMULATES ALTERNATIVES

Les Levidow (Open University)

Political protest has strengthened demands to transform or replace the high-carbon, resource-intensive production systems that cause GHG emissions and other environmental harms. Yet the political system has largely promoted climate fixes, namely: market-based instruments which are meant to incentivise or stimulate technological solutions. This techno-market framework evades the causes of environmental harm and so perpetuates them. Climate fixes provide an alibi to postpone decarbonisation measures while awaiting elusive technofixes such as climate-smart crops, second-generation biofuels, advanced thermal treatments of waste, Carbon Capture & Storage (CCS), etc. Although proponents acknowledge that such fixes are inadequate or premature, this becomes an imperative for greater state investment in their development, so that current production-consumption systems may continue. Meanwhile the techno-market framework promotes greater

market competition, displaces responsibility onto anonymous markets, undermines social cooperation, and depoliticises societal choices.
For all those reasons, climate fixes have provoked dissent and public controversy. Organized opposition can be understood as mobilised counter-publics counterposing alternatives and generating new knowledge for them. These alternatives encompass low-carbon solutions such as municipal-owned renewable energy, agroecological systems, and circular economy redesign. Many alternatives localise production-consumption circuits, impose lower resource-burdens, enhance socio-economic equity, and devise or adapt appropriate techniques for those aims. Together they can help to contest, change and replace harmful production systems.
Those rival futures can be understood as different sociotechnical imaginaries. Techno-market fixes link ecological modernisation reducing environmental problems to eco-efficient design, and neoliberal environmentalism constructing new markets as the main solution. By contrast, alternatives link eco-localisation, grassroots innovation, solidaristic commoning. Each agenda has a sociotechnical imaginary co-producing a distinctive form of natural resources, technoscientific knowledge and social order. Together these concepts help to illuminate patterns across the cases.

727 CITIZEN'S RIGHT TO CONTRIBUTE TO DATA: THE CASE OF ODOURCOLLECT AND THE INTERNATIONAL ODOUR OBSERVATORY

Carla Perucca Iannitelli, Science for Change (SfC) Johana Burbano, Science for Change (SfC) Miguel Hernandez, Science for Change (SfC) Rosa Arias, Science for Change (SfC)

Odour pollution is the second reason for citizens' environmental complaints in Europe, accounting for more than 30% of citizen environmental complaints worldwide. Unfortunately, odour pollution is barely regulated. Uncountable studies are mounting about its serious effects on people, such as headache, sleeplessness, stress, respiratory problems and other psychological and physiological effects. Furthermore, odour nuisance is connected to a fall in productivity, reduced economic activity, an effect on tourism and lowered house and community prices. Besides, due to the lack of regulations, situated technical studies are rarely conducted, data on odour pollution are scarce or not accessible, and the implementation of effective odour control strategies is usually disregarded.
To fill this gap, the International Odour Observatory (IOO) and the OdourCollect App (OC) were created to provide and gather information about odours within the H2020 D-NOSES project. They empower citizens to participate in decisions made about their environment, and support policy-makers and odour emitting activities to make informed decisions. IOO and OC not only address the right to access data in the framework of Principle 10 of Rio Declaration, but a right that is perhaps even more basic: Citizen's Right to Contribute to Data. Inasmuch as a transparent and accountable democracy demands the ability of all to produce understandable, valid data, this cannot only be within the purview of scientists, environmental and public authorities or industries, acting as gatekeepers of what information can be produced and considered in decision making. This paper will present how in the D-NOSES project, citizens produced valid data and participated in local decision making processes. In this way, through IOO and OC citizens have direct access to environmental information on odour pollution, but also actively contribute to generate data on a matter of their concern that is negatively impacting their quality of life.

722.QUADRUPLE HELIX ENGAGEMENT IN ODOUR POLLUTION: LESSONS LEARNED FROM THE D-NOSES PROJECT

Rosa Arias, Science for Change (SfC) Miguel Hernandez, Science for Change (SfC) Johana Burbano, Science for Change (SfC) Carla Perucca Iannitelli, Science for Change (SfC)

Odour pollution is the second cause of environmental complaints in Europe and globally, accounting for more than 30% of environmental-related complaints on average. And citizens are right: frequent exposure to odours can cause headache, lack of concentration, insomnia, anxiety, nausea, and even increase respiratory problems. This silenced type of pollution affects communities worldwide and usually is under-regulated. The H2020 D-NOSES Project developed an innovative citizen science methodology to monitor odour pollution where co-creation processes, balancing the interests of quadruple helix stakeholders, lead to 'win-win' affordable interventions with the potential to improve the situation for all sides. Achieving this requires knowledge, monitoring tools, the generation of new data through citizen science, dialogues, guidance, excellent communication and transparency. Following a quadruple helix approach, the methodology was implemented in 10 pilots in Europe, Chile and Uganda that covered a variety of contexts and scenarios in regard to the emitting sources and the socio-economical contexts. Some examples based on these pilots will be presented and discussed, putting special emphasis on the motivations, barriers, perspectives and benefits for each stakeholder. Furthermore, the strategy to involve them (i.e. who to engage first) will be discussed and analysed, whilst demonstrating the adaptability of the model. For example, in Barcelona, public authorities were initially reached as the owners of the odour emitting activities and responsible for protecting the population. The policy-society dialogues in the pilots catalysed the value absorption between stakeholders while increasing the transparency in affected communities. Nevertheless, some major reticencies arose between industries and public authorities due to the fear of transparency and the lack of trust in citizen-generated data, among others. Fundamental learning from D-NOSES was the importance of gaining the trust and commitment of all stakeholders from the beginning of the project, adapting the language and the engagement strategies depending on the scenario.

Room N105 - Panel 083 REFRACTING THE GOOD IN AND THROUGH ENVIRONMENTAL MARKETS

Session 2

793 HOW DO KNOTS GET TIED? - ECOLOGICAL GOODS IN ENVIRONMENTAL MARKETS, THE CASE OF AQUAPONICS IN BELGIUM

Sarah Delvaux (University of Liège)

The Anthropocene calls to rethink our modes of production and our relationship with the environment in multispecies worlds (Haraway, 2016). In this context, environmental concerns to achieve a low-carbon society, for instance through the advent of a sustainable bioeconomy, are very high on the European political agenda. In the agricultural sector, aquaponics, which consists in hydroponics and aquaculture, enabling the culture of fish, fruits and vegetables together, is one of the promising solutions to address such concerns (Goddek & al., 2015). In this paper, we focus on the aquaponics sector and study in a comparative way the business practices of three start-up companies in Belgium. We analyze how different notions of the ecological good coexist and are locally situated in multi-scaled entanglements (e.g. local, regional, national or European scales). These notions refer to different registers of valuation that are in tension and, therefore, so are the associated visions of a good life (Asdal et al. 2021). We analyse our empirical material through the lens of the concept of 'entanglement' (Rip 2010) and we argue that the notion of 'knot', i.e. a stabilized entanglement of the interactions that started at one scale and spilled over to the other scales, constitutes an interesting resource for characterizing the links that are forged at the interface between different notions of good in environmental markets. How do multi-scale entanglements emerge and stabilize around aquaponics and associated notions of the ecological good, and what role can be ascribed to knots in these processes of entanglement? Our analysis highlights the importance of care practices in these processes of entanglements, between and across various scales of analysis, and how different practices of care are associated with different visions of the good life.

836 MAKING GOOD PROMISES? SCIENTIFIC CULTIVATION OF SEAWEED

Marie Stilling (University of Oslo)

STS scholars have described the post-carbon economy as a 'good economy': One which promises to generate other-than-financial values, and not only produce goods, but also do good. In recent years, reports and papers have accredited Norwegian seaweed cultivation with abilities to counteract ocean acidification, biodiversity loss and carbon emissions – as well as an enormous potential for financial growth. In this paper, I study an emerging industry of seaweed cultivation to investigate how the promise of growth is made good through scientific practice. Inspired by practice-oriented document analysis and valuation studies, I study documents as 'sites' where valuation practices can be studied in action. I combine this with a more-than-human ethnographic attention to how growth visions refigure landscapes and living conditions for more-than-human lifeforms. I ask how scientific reports and papers brings growth potentials into being, and how growth estimates refigure seaweed biomes and their values.
I follow a much-cited estimation of the Norwegian seaweed industry's growth potential (DKNVS and NTVA 2012) into scientific reports and papers that attempt to facilitate sustainable and profitable seaweed cultivation. Positioned as simultaneously the aim and the factual foundation of seaweed science, the growth potential becomes a reference point for the valuation of seaweed qualities and the seas' production potential. It re-locates cultivation offshore and refigures good seaweeds as those that easily colonize available substrates, enabling newcomer species to flourish in the deep sea; invited as well as invading.
I argue that these reports and papers themselves serve as sites of cultivation: By performing experiments that qualify and quantify the value of Norwegian seas and seaweeds, they congregate and co-produce seaweed qualities, markets, and seascapes.

454 FOOD WASTE IN 'THE GOOD ECONOMY': AN ETHNOGRAPHIC STUDY OF THE DESIGN OF A NOVEL FOOD WASTE APP

Aline Stehrenberger (University of St. Gallen) Tanja Schneider (University of St. Gallen)

Mobile phone applications (apps) that support ethical and sustainable consumption practices have garnered the attention of a growing number of consumers (Eli et al., 2016; Fuentes and Sörum, 2018; Fuentes et al., 2021; Hawkins and Horst, 2020). In this paper, we explore apps that focus on household food waste reduction and ask which visions of sustainable eating shape the development of these apps. Considering food waste apps as exemplary of 'the good society' (Asdal et al., 2021), we first provide a short overview on existing food waste apps and current research on this topic. Next we report on participant observation of virtual collaboratories (Knorr-Cetina, 2016) during the design and development phase of one novel food waste app. This app, developed by an interdisciplinary research team, builds on voluntarily donated grocery shopping data, collected through customer

loyalty programs of two major Swiss retailers. The team aims to reduce household food waste by changing consumers' shopping and relatedly eating practices based on regular app use. In our analysis we show a) how science features in the design and development phase by demarcating what is thought of as sustainable eating (e.g., through focusing on and assessing of food waste patterns in relation to shopping behaviour) and b) what is considered a 'good' app within the heterogenous research team. Our study adds to existing studies of ethical and sustainable consumption apps that examine the reconfiguration of everyday eating practices by providing insights into the app development process. We show how app developers value sustainable eating, in this case by reducing food waste, and build these (e)valuations into the app - with the vision to eventually derive an automated, market-based app solution. We conclude with a critical reflection on the contribution of this app to the public good.

Room N102 - Panel 087. ENERGY FUTURES FROM THE PAST

Session 2

973. INCREASING THE STOCK TO MAINTAIN THE FLOW. THE IMPLEMENTATION OF A WAIT-AND-SEE INFRASTRUCTURE BY THE FRENCH NUCLEAR SECTOR TO FACE THE FUTURE

Martin Denoun (GSPR - EHESS)

Since the 1960s, the French nuclear policy has consisted in opting for a closed fuel cycle, a policy now abandoned by all Western countries except France. This policy, called the "fuel reprocessing strategy", requires the operation of a series of dedicated plants for the storage, processing and transportation of these fuels. I propose to call this infrastructure the nuclear logistics infrastructure, in order to shift the focus from reactor infrastructure - which has today mainly occupied academic works on civil nuclear power - to fuel infrastructure.
Reprocessing generates several types of materials: new fuels, "recoverable materials" - mainly plutonium and depleted uranium - and residues. The French industry is today confronted with the prospect of saturation of the storage pools for "recoverable materials" because of a future that is not happening, that of fast neutron reactors theoretically capable of being fueled with these materials. This saturation threatens to paralyze the entire system, because the continuous flow of fuel is a necessary condition for the proper functioning of the system. Faced with this prospect of saturation, the French operator EDF is planning to build a "centralized pool" with a life span of 100 years in order to store more spent reprocessed fuels.
At the intersection of infrastructure studies and future studies, I propose to show how the French nuclear sector is engaging in a wait-and-see policy in the face of a future that is not very conducive to its development, and which even threatens the existence of part of its infrastructure.

317 SITUATED ENERGY TRANSITIONS : CONFRONTING THE LOCAL PAST. THE PRATS-DE-MOLLO CASE STUDY

Soubra Baptiste (HT2S, Cnam) Bocquet Bertrand (HT2S, Cnam, Université de Lille) Techer Rieul (Oxamyne, La Myne) Pommier Mikhaël (Oxamyne, La Myne) Loubet Nicolas (Oxamyne, La Myne)

How emerging situated energy transition dynamics and their past energy history are bound ? Beyond the technicality of harvesting renewable energy sources to power local grids, making energy transition to happen is a matter of embedding situated sociotechnics and politics within technical approach (Zélem, 2012).
This paper describes a recent sociotechnical energy transition experimentation dealing with the legacy of past vision of energy futures. It took place in Prats-de-Mollo, a village in the French Pyrenees engaged in an energy transition process to both reduce energy cost by relocating electricity production and engage local citizens. The experimentation we describe aimed at designing both democratic local governance of energy system and Citizen Governed Data Platform to supports it through innovative situated social and technical approaches. This field work made it necessary to interact with the locals and the energy system, both carrying legacy of past energy systems.
This socio-ethnographic case study enables to draw a picture of how the local past history weights on its energy futures. We firstly describe how this past broke in along the design process, we then enlighten in which ways it affected it, to finally draw our attention to the importance of locally and historically build energy representation in shaping energy futures. While mobilizing non-conventional ways to think about and act upon local energy government, the experimentation revealed the significance of the past history of the local energy system. It indeed deals with the infrastructures and its maintenance, the socio-political organization inherited from a century-old municipal grid operator and the imaginaries related to energy and memorable catastrophes that shaped current choices. Understanding such past appeared to be key to root the design within the milieu and mobilizes inhabitants. Designing the transition from the local vision of energy, shaped by local history, allowed to unlock its social dimension.

307 OPENING THE BLACK BOX OF RENEWABILITY: THE GREEK WIND ENERGY CASE.

Dr. Zoi Christina Siamanta (Department of History and Philosophy of Science, National and Kapodistrian University of Athens, Greece) Dr. Giorgos Velegrakis (Department of History and Philosophy of Science, National and Kapodistrian University of Athens, Greece) Panagiotis Kazantzas (Department of History and Philosophy of Science, National and Kapodistrian University of Athens, Greece.) Professor Aristotle Tympas (Department of History and Philosophy of Science, National and Kapodistrian University of Athens, Greece)

Renewables' key role in mitigating climate change and the so-called energy transition is premised on the popular imaginary of "renewability", developed by past visions of low-carbon technologies and newer ones of decarbonization. Renewable energy (RE) research in the social sciences and humanities has begun to explicitly challenge "renewability" based on different approaches and perspectives. Yet, an STS approach to questioning

"renewability" remains underdeveloped, while electricity transport networks are underexplored within this framework. This paper adopts an STS approach to open the black box of "renewability", challenging prevailing sociotechnical imaginaries of large-scale RE infrastructures and reconceptualizing the notion. It employs the Greek case of wind energy and focuses on the country's electricity transport network, delineating how this network has been structured and is being developed, how wind energy is incorporated in it and what these entail, and describing how technological black boxing occurs. For the case, we use literature, studies and data already published. We find technological black boxing when wind energy enters the long electricity transport and consumption network, indicating how renewables and fossil fuels are not dichotomized as popularly understood. By examining this large technical system and related black boxing, we argue that the "renewability" of (large-scale) grid-connected RE projects as popularly understood should be reframed. "Renewability" should be understood according to technical, social and natural aspects (e.g. electricity networks, mode of production, extraction costs, impacts on socioecologies, fictitious 'production' in people's minds). Thus, and building on critical social science research on renewables, we highlight the urgent need for new radical RE approaches and consider if and how "renewability" could 'make sense'. Our key contribution to STS, and RE research whether inspired by STS or not, rests in showing how "renewability" is a sociotechnical construct, which conceals, amongst other things, long electricity transport and consumption networks.

164 FROM INDUSTRIAL EXCESS TO INFRASTRUCTURAL CONVERGENCE: DISTRICT HEATING AND FACEBOOK DATA STORAGE IN ODENSE, DENMARK

Caroline Anna Salling (IT University of Copenhagen)

This paper's focus is on industrial excess as engineered bridge between decaying infrastructures and future energy relationships in which Big Tech are involved not only as consumer but also as producer.
In Odense, Denmark, a hyperscale Facebook datacenter and a local district heating system are connected. The heat produced as a form of excess within servers in the datacenter is utilized as fuel to substitute coal in the city's heating infrastructure. This convergence I have researched through ethnographically participating in the everyday work of the engineers that have planned and constructed the convergence. In 2019-2020, the pipes, heat pumps and computers that facilitate the convergence were tested, and soon after the datacenter was scheduled to scale up. Thereby also increasing its production of the so-called excess heat from servers.
The integration of Big Tech as energy producer within the Danish energy grid is part of general efforts to electrify more energy intensive infrastructures and phase out solid fuels. However, the production of energy from coal in Odense is phased out for dependency of electricity produced elsewhere in the Nordic grid. District heating infrastructures have been constructed in Denmark for many decades but particularly became prevalent as solution to the oil crises of the 70's. These vary in size, but the largest infrastructures are still being extended, of which some are made up of gigantic pipe networks that similarly require gigantic energy sources to power them, through which datacenters in Danish regulation are imagined to be one solution.
In this I attend to the infrastructural politics of the convergence through industrial excess with particular attention to both the regulation and the everyday engineering work at the energy plant.

483 MATERIALISING ENERGY FUTURES THROUGH THE LENS OF KVANEFJELD

Abraham Florian (University of Exeter - Department of Sociology, Philosophy, and Anthropology)

This paper discusses green energy futures through the lens of the Kvanefjeld mining project in Greenland. Through proposed extraction of both REEs and uranium in one particular place, the mining project transposes a global discussion on energy futures that opposes nuclear energy and renewable energies, to the local level. Green NGOs have mobilised against the project, and although they acknowledge the need for REEs in the making of renewable energy technologies, they condemn the extraction of uranium that will feed nuclear power plants.
The Kvanefjeld deposit was first explored by Denmark from the early 1950s to the late 1980s, a time during which Denmark extensively researched the feasibility of a domestic nuclear energy programme fuelled with Greenlandic uranium. The rise of anti-nuclear movements led to the abolishment of the Danish nuclear energy programme in 1985, and a subsequent ban on uranium activities in Greenland in 1988.
Using desk-based analysis of historical texts and first-hand data (interviews) collected on the field, I show how past issues that remained unsolved with the abolishment of the Danish nuclear energy programme are resurrected in the modern debate. This, I argue, shapes how conflicting arguments are weighted in current discussions, and I show that the nature of the current debate in Greenland leads back to Denmark's energy production choices of the past.
This paper contributes to the STS tradition of work on energy transitions. It questions the co-development of conflicting visions on energy strategies, which materialise in places like Kvanefjeld. Although nuclear and renewables are often put in opposition in energy debates, I suggest they are intrinsically linked both in and on the ground. The recurrent presence of uranium and other radioactive materials in REE-bearing rocks can impede the development of renewable energies on the ground through conflicting visions of energy futures extraction unearths.

Thursday, 7th July

9:00-10:30

Room N109 PANEL 002 CONFLUENCES OF GENETICS AND DIGITAL DATA IN SECURITY SETTINGS

Rafaela Granja (Communication and Society Research Centre (CECS), University of Minho, Portugal)
Mareile Kaufmann (Department of Criminology and Sociology of Law, University of Oslo, Norway)
Matthias Wienroth (Centre for Crime and Policing, Northumbria University, UK)

Recent sociotechnical developments have brought genetics and digital technologies together. Nowhere is this more apparent than in public safety and security contexts. How does this transformative confluence impact security discourse and practice, and society at large?

Genetics is a continuously expanding research area with a long tradition of tools for public safety and security, e.g. in law enforcement, commercial security, victim identification, and anti-terrorism surveillance. Its further development into epigenetics and epigenomics draws academic, industry, policing, and policy interests, presenting new opportunities and challenges for these domains. The rise of digital DNA technologies generates additional transformations as they change DNA practices in terms of scale, data mobility, and novel tools for analysis. Genetics databasing at increasingly complex scale, and forensic applications for phenotyping, genetic genealogy, and epigenetics are but some examples of technologies currently changing practices in law enforcement and other security domains. Not only does this trend call for further engagement with reliability, utility, and legitimacy as guiding valuations in new developments, but it recasts procedures, politics, and concepts. Rising commercialization and professionalization of such techniques further complicate their functioning and influence. In addition, techniques and their implementation vary notably across countries while their cross-border uses are increasingly discussed and tested.

We invite contributions providing insights of present and future challenges raised by the interface of genetics, the digital, and security. Papers may provide theoretical conceptualizations, methodological approaches, or case studies that illustrate how "digital genetics" are developed, debated, and mobilized within security settings.

Session 1

287. CONTRASTING SOCIOTECHNICAL IMAGINARIES OF GENETICS AND POLICING: PERSPECTIVES OF POLICE, PRIVACY ADVOCATES, AND GENOME PROJECT PARTICIPANTS

Tayfun Kasapoglu (Tallinn University of Technology) Anu Masso (Tallinn University of Technology)

Law enforcement has long been using genetics by collecting and analyzing DNA samples mainly to identify criminals, but also to define paternity, identify victims of crimes and other disasters. Recently, developments in digital DNA technologies have transformed DNA practices by simplifying the collection and storage of DNA data, increasing its mobility and availability, and lowering its overall cost. As a result, direct-to-customer DNA testing kits for finding ancestry, mail-order CRISPR kits that allow making changes to DNA have become available widely. These developments raised concerns about surveillance and gene privacy, agency, and consent related to the use of gene technologies by non-expert people and also law enforcement. This study aims to explore sociotechnical imaginaries of people about genetics and policing by focusing on two related questions; a) how do people perceive the use of gene data by law enforcement? b) How do people perceive the potential role of law enforcement when amateur scientists utilize the tools for gene editing in diverse settings? To that end, we use an experimental approach and combine eye-tracking technique with qualitative interviews conducted with police officers, privacy advocates, and volunteer participants of a genome project to access diverse, contrasting perspectives. As a part of the experiment, the participants watch short video clips about different scenarios related to DNA and policing and then look at the images that appear on the screen and respond to a set of questions. This indicates which scenarios are paid attention the most and allows us to better focus on certain topics during the following interview. Understanding the contrasting sociotechnical imaginaries on genetics and policing provides deeper insights into concerns, expectations, and projected futures of and for people.

227 INTERFACES OF FORENSIC, MEDICAL, AND (NON)COMMERCIAL EXPLOITATION OF 'GENOMIC POTENTIAL': EPISTEMOLOGICAL AND EPISTEMIC DIMENSIONS

Matthias Wienroth (University of Northumbria) Rafaela Granja (University of Minho)

For decades, the governance of forensic genetics was built on the understanding that genetic markers used for DNA profile comparison could not reveal personal information. This assumed that corresponding alleles on the genome do not contribute to gene expression ('non-coding'). Such a distinction between non-coding and coding markers, however, is progressively challenged by clinical, commercial, and forensic research and use of forensic DNA phenotyping, biogeographic ancestry testing, forensic genetic genealogy, forensic epigenetics, and combined analysis of diverse loci in massive parallel sequencing. These developments, increasingly incorporated

into policing, show how entwined security and biomedical developments with commercial and consumer services are becoming in genetics. Demarcation between these areas is increasingly difficult, with significant implications for ethical considerations of their use.
In our literature-based enquiry, we attend to the interfaces of forensic and medical, commercial and non-commercial exploitation of genomic potential, focusing on crossings and overlaps in these four domains of interest along two broad dimensions: (1) Epistemologically, in the understanding of genetics and the value it offers, and (2) epistemically, in the constitution of user communities, their purposes, and their governance (regulation, codes of conduct, professional ethics). The first dimension is framed by genetic research challenging a meaningful distinction between 'coding' and 'non-coding' DNA, thereby undermining the building block of much regulation in the field of forensic genetics. The second dimension outlines some differences and similarities between biomedical and forensic domains, as well as between commercial and non-commercial providers, which have unfolding consequences for the governance of forensic genetics.

884 DIGITIZATION OF PATHOLOGY DEPARTMENTS IN DENMARK: EXPLORING THE CHANGING LABORATORY AND DIAGNOSTIC PRACTICES

Olsi Kusta (University of Copenhagen, Department of Public Health)

Pathology departments provide laboratory services mainly for cancer patients through the examination of tissues and cells under a microscope. The work of pathologists is increasingly important due to the specialization of diagnostics and treatment (personalized medicine) of these patients, which has brought a closer collaboration with clinical settings. As more and more departments embark in a digitization process, their routine work practices change in two directions. First, the laboratory work of preparing patient samples adds the extra step of scanning the glass slides to the digital ones and the quality assessment of the latter. Secondly, diagnostic practices shift from examining glass slides under the microscope to viewing them in a computer screen as digital slides. Proponents of digitization argue that it has great potential to speed up the diagnostic work through an efficient workflow based on data-intensive practices. Moreover, in their view, it promises future benefits from using image analysis of digital slides based on artificial intelligence. Drawing from material-semiotic approaches in science and technology studies (STS), I focus on this change by exploring how digitization is enacted in pathology practices and by different actors in collaboration with each other (Mol, 2002). Based on an ethnographic study of two pathology departments in Denmark, we trace how patients' specimens are translated into laboratory samples by bioanalysts; then digitized slides to be examined in a computer screen by pathologists. Within this shift from a physical space of the laboratory to the virtual space of digital data in networked systems, the aim in this article is to understand the temporal implications for the involved actors. Therefore, digitization is in a crossroad of two interrelated temporalities, making time for diagnosis of cancer patients and taking time for the diagnostic process.

Room N101- Panel 008. MICROBES I: THINKING PAST DUALISMS

Session 3

552 CARING WITH HAUNTED MARINE MICROBES

Astrid Schrader (University of Exeter)

Exploring scientific accounts of marine microbes that update understandings of microbial existences in the controversially named Anthropocene, this paper argues that attention to the temporalities of microbes allows for new modes of caring in the practice of science. Making sense of newly affirmed phenomena such as the collective suicide of marine algae or the circadian rhythms of cyanobacteria (that don't live a day) requires new ontologies that replace the priority of being and presence with inheritance and transgenerational communications: that is, a hauntology as introduced by Jacques Derrida. I argue that these biohauntings make explicit the contribution of scientific observation to the observed phenomenon. Caring becomes enabled by an out-of-jointness of the microbial self. 'Caring with' articulates two relationships at once: between science and technology studies (STS) and science, on one hand and between scientists and their 'object' of studies, on the other hand. While pushing thinking to the limit, 'caring with' displaces the opposition between 'thinking with' and 'living with', as abstract and embodied activity. Rethinking 'the limit' with care – the limit between life and death and between individual lives and that of populations, for example – requires an abyssal logic, a logic that allows for an opening in the structure of being. Renewed attention to microbial life not only updates understandings of microbial existences, but also at the same time challenges some metaphysical assumption about how science is done, its relationship to philosophy, politics and ethics.

174 LIFE AFTER POLLUTION: HUMAN-MICROBE SOCIALITY IN POST-POLLUTED REMEDIATION ENVIRONMENTS

Alicia Ng (University of Helsinki)

Nature-based techniques using microbes have been used to remediate environments contaminated by anthropogenic pollution such as from oil spills, mine tailings, and electronic waste dumping. Microbes, such as bacteria and fungi, can be employed to remediate polluted areas, and have been shown to degrade, transfer, and sequester toxins in polluted soils. This paper will explore the co-evolving nature of human-microbe relations, specifically the working relations between humans and microbes to alleviate pollution in contaminated environments. It will aim to address the questions: What new human and more-than-human relations emerge in post-anthropogenically polluted spaces? Does this also mean an emergence of new ecologies and/or different ecological balances?
The paper will be theoretically based in STS scholarship on chemosociality (Kirksey 2020), alterlife (Murphy 2017) and the multispecies (Kirksey and Helmreich 2010). Experientially it is based from ongoing (remote and in person) fieldwork in Finland and China with scientists, project managers, and artists involved in the bioremediation of polluted environments.
The paper will argue towards collaborative, processual multispecies relationships with microbes and humans in conditions that are degraded, toxic, and unfavourable to life – conditions that are "living in the ruins" (Tsing 2015) and increasingly the norm in the Anthropocene. Microbes in these cases are a principal actant in the remediation process, as well as a collaborator with humans. This paper will address the new paths this working relationship can lead to, but also address the challenges that this relation and its shaping as a nature-based solution can hold. This paper contributes to thinking on relationality, chemosociality, and to expanding microbial worlds in STS.

928 WORKING WITH FUNGI, MAKING WITH MICROORGANISMS: INTERSPECIFIC COLLABORATION AND CREATIVITY

Juliette Salme, University of Liege (BE)

In the last years, there has been a democratization of practices harnessing living (micro)organisms to produce eco-friendly goods, e.g., biodegradable materials that are made using vegetative part of a fungus (mycelium) or symbiotic cultures of bacteria and yeast (SCOBY). Those post-Pasteurian (Paxson, 2008) practices are great examples of activities that are increasingly being studied as shedding light on microbes as allies in human projects instead of dangerous pathogens only. It is nevertheless important to note that in this movement, dualisms must not be reproduced as it is not a matter of good versus bad microbes; rather, it is one of complex contingencies.
Decentering the perspective and seriously considering microbes as actors invites us to reflect on the implications of some notions central to the social sciences, and to anthropology in particular. This paper takes one particular ethnographic case of an ongoing research — involving architects and designers working together with mycelium to make an artifact, contamination from another fungal specie, and "surprise" as a key element in those human-microbes relationships — as a starting point to reflect on the concept of creativity. Following the argument of Hallam and Ingold (2007) that creativity is more about improvisation than it is about innovation, and that focusing on the outcome rather than on the process is "backward reading symptomatic of modernity", this paper looks at moments of making that involve humans and microbes. By asking if microbes can be "co-creators", and therefore

by examining how does working with or collaborating with fungi/bacteria operate in practice, the question at stake is the one of non-human agency, its definition, its perception, and its consideration.

Room N106 - Panel 013. SOCIETAL ACCEPTANCE OF NEW AND EMERGING TECHNOLOGIES: CRITICAL ENGAGEMENTS IN ENERGY TRANSITION AND CLIMATE CHANGE MITIGATION

Ana Prades (CISOT-CIEMAT, Spain)
Ana Delicado (Institute of Social Sciences, University of Lisbon, Portugal)
Marc Poumadère (Inst. Symlog, France)
Elisabeth Dütschke (Fraunhofer ISI, Germany) Jussara Rowland (Institute of Social Sciences, University of Lisbon, Portugal)

The climate crisis is upon us, and the both positive and concerning outcomes of COP26 (26th UN Climate Change Conference of the Parties) shape futures in energy use. Energy choices, security and prices have become almost permanent features in the headlines in the mainstream media throughout Europe. Technological solutions have been called to play a major role in the transition towards a carbon neutral society. From energy production to transportation, from industrial processes to geoengineering, innovative proposals to reduce, sequester or altogether avoid emissions are under discussion or even experimentation.

A key component in this pathway towards the energy transition and climate change mitigation deals with the societal acceptance of these emergent technologies. How do citizens perceive and engage with them? How willing are citizens to adopt new technological devices or to welcome new technological infrastructures in their communities? How are risks and benefits envisaged and assessed? What role do dimensions such as knowledge, procedural and distributive justice, affect, or trust play in social acceptance? What narratives evolve around the solutions proposed and how do they interact with how technological development is driven forward? How is acceptance/acceptability influenced by policies, incentives, cultural values, socioeconomic drivers? Which steps are taken by technologists and governance actors to ensure responsible research and innovation, with its ethical and pragmatic requirements of education, open science, consultation and co-construction?

This panel invites contributions on the societal acceptance of energy technologies and technological developments that may play a role in the energy transition and/or in the climate change mitigation processes. Proposals can include conceptual approaches and models, methodological developments, or empirical studies on the social acceptability of specific technologies and/or technological developments, case studies or comparative approaches. We welcome proposals from PhD students and under-represented geographical contexts.

We aim to have a final session devoted to stimulate discussion on the main research gaps and tentative agendas for the future. A deliberative/participatory exercise will be proposed to identify the key topics for further research.

Session 1

837 MAINSTREAMING WITH STS? – TURNING OUR ORIENTATION OR TURNING OUR BACKS TO DOMINANT TECHNOLOGIES IN SUSTAINABLE ENERGY

Sampsa Hyysalo (Aalto University)

STS as a field emerged through critical analysis of alleged technological progress, aligned with a pursuit for socially and environmentally more benign alternatives. Renewable energy, wind turbines, solar PV, solar heat, heat-pumps, micro biomass and energy efficiency improvements (and so on), has been a continuing alignment regarding more democratic and environmentally sound energy. Lo and behold, these alternatives are on a verge of becoming our dominant energy future with an increasing urgency on yet wider proliferation to mitigate climate change. This lands STS to an interesting tension. STS analyses show that no technology can scale and proliferate without adverse effects, hindrances and social choices along the way and many in STS now focus on energy (in)justice, side-effects and neglected and disenfranchised groups, in all critically complicating the renewables' dominances as STS has done others. Yet, STS also shows that technologies do not miraculously advance with their own laws, but require social action to overcome the continuous stream of technical, institutional, cultural and environmental hindrances and reconfigurations. Will and can STS also pursue an advocate or an instrumentalist approach to near-dominant technologies? How might this look like? I argue that the tensions inherent to a being in a 'critical advocate' orientation can be handled but require new orientation. In terms of research practice, long-term engagement with particular arenas and ecologies of actors helps selecting sites and times for meaningful STS engagements and intervention. Conceptually, tracing the series of configurational movements that have taken place in the proliferation process provides means to articulate what the relevance of the chosen sites is; e.g. our present research is on citizens' digital decarbon communities, as these at once move renewables to new building typologies and contexts as well as enhance energy ownership and democracy, and do so at a scale which traditional energy communities cannot.

366 ACCEPTANCE OF CCUS TECHNOLOGIES AS A CHALLENGE IN THE ENERGY TRANSITION - FINDINGS FROM SPAIN AND FRANCE

Dütschke Elisabeth (Fraunhofer-Institut für System- und Innovationsforschung ISI) Vicki Duscha (Fraunhofer-Institut für System- und Innovationsforschung ISI) Christian Oltra (CIEMAT) Prades Ana (CIEMAT)
Sabine Preuß (Fraunhofer-Institut für System- und Innovationsforschung ISI)

Carbon capture, utilisation and storage (CCUS) is a technology that is widely unknown in large parts of societies. A decade ago it was higher on agendas due to a period of heavy engagement of policy makers and industry which was met by heavy local resistance to some initiated projects. Afterwards the development slowed down. With increasing ambition to decarbonize industries and to reach net-zero emissions, the technology is now receiving increasing attention again. Thus, CCUS presents an interesting case for STS-research. In the proposed paper we examine the interplay between technology governance and societal perceptions on CCUS.
The paper focuses on two countries, namely France and Spain. Both countries face major challenges in decarbonizing industrial processes and institutions from the two countries participate in European projects to analyse the potential of CCUS in selected regions. Our paper builds on (i) an analysis of the policy framework (ii) an interview study with European and country stakeholders, (iii) a broad survey study combining representative samples from the national and the regional level.
For France, we find that CCUS is part of political strategies for climate change mitigation which aligns with optimistic stakeholder perceptions. In Spain, instead, policy support is less clear and pronounced while stakeholder expectations are positive, but more regarding small scale applications and further development in a medium time frame. With regard to the public, awareness is low, but acceptance was higher in Spain compared to France. In the paper we will interpret these findings with regard to future pathways for CCUS and also more broadly for STS and technology pathways in the energy transition.

166 DOES MONITORING MATTER? UNDERSTANDING THE PERCEPTION AND SOCIETAL REQUIREMENTS FOR CARBON CAPTURE AND STORAGE (CCS) IN GERMANY, GREECE, NORWAY AND THE NETHERLANDS

Danny Otto (Helmholtz-Centre for Environmental Research) Marit Sprenkeling (Netherlands Organisation for Applied Scientific Research – TNO) Ruben Peuchen (Netherlands Organisation for Applied Scientific Research – TNO) Åsta Nordø (Norwegian Research Centre – NORCE) Dimitris Mendrinos (Centre for Renewable Energy Sources and Saving – CRES)

This talk is based on the international research project “DigiMon – Digital Monitoring of CO2 storage projects”. It contributes to understanding the ongoing controversies around carbon storage by studying the societal requirements for CCS technologies in Germany, Greece, Norway and the Netherlands. Special attention is given to the role of carbon storage monitoring systems and their influence on the perception and acceptance of CCS. The central aim of the project is to develop a human-centred monitoring system, meaning a monitoring system that is designed to take the concerns and requirements of publics and stakeholders into account. In this talk, we present how we approached this task and illustrate the main findings.
We developed the Societal Embeddedness Level Framework (SEL) for a multi-level analysis of the societal perception of technological innovations. Based on this methodology, a combination of qualitative and quantitative research methods was used to study the perception of CCS and the societal requirements of a CCS monitoring system. First, we conducted 45 semi-structured interviews with (local) stakeholders and CCS experts in the four countries to gain insights in stakeholder experiences and preferences regarding CCS and CCS monitoring. Secondly, we designed an informed questionnaire and applied it in online surveys to study the opinions of the general public at national and local levels. The results were systematized, evaluated with technical experts and indicators for a human-centred carbon storage monitoring system were validated in additional stakeholder workshops.
We will introduce the core findings of our study and establish how the monitoring of CO2 storage sites could play a role in optimizing the societal embeddedness of CCS projects if public and stakeholder preferences are taken into account. The talk closes with reflections on the difficulties in enabling meaningful public participation in technology development, especially if complex and little known technologies are concerned.

491 TOWARDS OPEN ENGINEERING: INVOLVING PUBLIC(S) IN TRANSITIONAL INFRASTRUCTURE DESIGN

Matjaz Vidmar (The University of Edinburgh)

In the past few decades, public(s) have become increasingly involved in the making of science and technology. Paradigms such as citizen science and responsible research and innovation (RRI) have paved the way to a more direct engagement of stakeholder groups and communities with the making of techno-scientific futures. However, a major challenge remains with engaging public(s) with (re-)design of systems and infrastructures. In particular, complex systems in transition, such as the interplay of energy infrastructure and natural resources management often remain in the purview of engineers and planners, with only limited scrutiny afforded to public representatives and public(s) themselves.
With the looming climate emergency, as well as the digital pivot arising from the latest phase of IT revolution and post-Covid-19 working reality, a radical (re-)development of infrastructural systems has particular urgency. Two (conflicting) directions are emerging – the distribution of assets and governance, whilst centralising data and

intelligence. In order to reconcile the operation of such systems, imaginative user-centred platforms are required – but their development is slow.
In this paper, a series of new approaches to socio-technical systems (re)design are put forward. Building on the Multi-level perspectives (MLP) framework and System Engineering Management (SEM) principles, a roadmap for Open Engineering is being put forward combining living laboratory configuration(s), strategic mapping and alignment tools and futures design methodology. Using historical and contemporary micro case studies from the deployment of satellite data and artificial intelligence/machine learning in climate-related interventions, this paper puts forward a possible way for Open Engineering to (re-)make individual, institutional and infrastructural futures.

823 SOCIAL ACCEPTANCE OF AUTOMATED VEHICLES AND ITS RELEVANCE FOR CLIMATE-FRIENDLY MOBILITY FUTURES

Jens Schippl, Institute for Technology Assessment and Systems Analysis (ITAS), Karlsruhe Institute of Technology (KIT) Torsten Fleischer, Institute for Technology Assessment and Systems Analysis (ITAS), Karlsruhe Institute of Technology (KIT) Maike Puhe, Institute for Technology Assessment and Systems Analysis (ITAS), Karlsruhe Institute of Technology (KIT)

The mobility sector contributes significantly to energy consumption and climate change. Private cars are one of the main sources of mobility-related carbon emissions and the number of private cars increases continuously. Many experts see automated driving as a central building block of a sustainable mobility transition, which is comparable to the energy transition in Germany and in other countries in terms of its paradigmatic reorientation. It is argued that automated vehicles will enable new forms of flexible and affordable mobility services (e.g. automated shuttles, robo-taxis) which potentially become an attractive alternative to private car transport and, thus, help to increase sustainability and reduce carbon emissions of the mobility sector.
In order to enable a more sustainable and climate-friendly mobility system, it is crucial whether, in what way and for what reasons automated services are used and accepted by citizens. For a mobility transition to become feasible, citizens must not only use a new technology but also, at least to some extent, change established mobility practices. Moreover, they may have to accept policy measure which support alternatives to private cars. In this presentation, we would like to take a closer look at the concept of social acceptance and its meaning in the context of autonomous driving. We intend to start with conceptual reflections on different aspects of social acceptance and their potential implication for automated driving. On that basis, we present results from an interview-study with 30 citizens on mobility and automated driving. The interview study was conducted in a district of the city of Karlsruhe in spring 2021, where at that time an automated shuttle service was tested on a trial basis. We will discuss the relevance of the results for future developments in the fields of automated driving and sustainable, climate-friendly mobility.

Room N114 - Panel 018 THE CREATION AND IMPACT OF ROBOT VISIONS AS KEY ELEMENT OF TECHNOSCIENTIFIC FUTURES

Session 3

675 "HERE COMES AN ELECTRONIC ARTIST!" – COMMUNICATING DISCOURSES SURROUNDING NONHUMANS INVOLVED IN A CREATIVE PROCESS

Bojana Romic (Malmö University)

The aim of this presentation is to revisit the existing discussions surrounding the so-called "creative robots" and consider a paradigm of sociomorphing (Seibt) as a useful concept for the analysis of such robots or AI within the STS framework. "Creative robots" are defined as robots invested in some form of creative production (Besold et al.; Bown, 2021).
The field of creative robotics (a niche of computational creativity) shows tension in the understanding of what "creativity" is when considered in the context of nonhumans. While many HRI and computer scientists see creativity primarily as a human property which can be stipulated for some nonhumans (AI/robots) (see: Colton; Boden & Edmonds), STS researchers tend to observe creativity as a socio-political construct that may involve humans and nonhumans alike (Zylinska, 2020; Romic, forth.). In congruence with this, a human "should not be observed as the privileged referent against which the second is defined and judged." (Suchman, 2008, p. 140)
The concept of sociomorphing criticises the use of loaded language that may provoke improbable expectations from a nonhuman: e.g. in my previous article, I analysed an anthropomorphic robot that was presented in media as an artistic persona (Romic, 2021).
Considering the history of nonhumans involved in a creative production, and the interconnection between all actors involved in a creative process, I want to consider the role of language in communicating that process. I use discourse analysis to assess a selection of popular media articles that are commenting on the robots or AI involved in a creative production.
I argue that vague and ambiguous language can provoke imaginaries which perpetuate technological myths (Natale, 2021), especially amongst lay audiences.

932 VISUALIZATIONS PRACTICES OF INTERDISCIPLINARY COLLABORATIONS - THE EXAMPLE OF RETHICARE

Philipp Graf (Technical University Chemnitz)

Visual representations of data have great potential to provide a quick overview of complex relationships or to create a deeper understanding of them while being more memorable. As such, they are encountered in many societal contexts, and an extensive literature informs how such translation processes can work at best. At the same time little is known about the role visualization practices can play in interdisciplinary research contexts in order to cross disciplinary boundaries and foster scientific collaborations.
Drawing on our practical experiences in the care robotics project »ReThiCare«, I provide an overview of visualization methods and practices that we used to support interdisciplinary development work on various ideas for autonomous technology for the care context. At various stages of the project, we have sought to connect the fields of social science, design, and robotics by visualizing analytic codes, developing video prototypes, or exploring design spaces. The presentation focuses on differences in the functioning of the practices (process vs. translation), their functionality in the collaboration (transformative vs. informative) and the pitfalls they brought to the process. I conclude with lessons learned from the project and make recommendations for the use visualizations for interdisciplinary collaborations.

1023 BODIES AND IMAGINARIES IN ROBOTICS RESEARCH PRACTICES

Ilenia Picardi (Università di Napoli Federico II) Maria Carmela Agodi (Università di Napoli Federico II)

Robotics is an emblematic sector in which to analyze the practices, imaginaries and materials of interfacing bodies with technoscience. STS literature reconstructs imaginaries and genealogies (Haraway 1989; 1991; 1997; Castaneda and Suchman 2014) of new forms of relationality and shared agency of humans and non-humans, showing how the design of robots as humanoids is inscribed in the reduction of physicality in in-corporation (Suchman 2011). The robot, in this type of imagery, is quasi-human and/or post-human: a model for the study but also and for the "redesign" of the human and its philosophic and onto-genetic genealogies.
This paper presents the results of laboratory studies conducted in the PRISMA Lab (Industrial and Service Robotics, Mechatronics and Automation Projects) of the University of Naples Federico II, where an internationally recognized team leads the strategic research program in Robotics and Robotic Surgery.
The objective of the research is to analyze the scientific practice involved in the research projects on the robotic body can become "a reflective body practice", or rather a social practice in which the robot body is the object (of design) and subject (of reflective learning) at the same time.

The focus of STS research on robot design as socio-material assembly processes of hybrids helps to detect how cultural models and imaginaries embedded in robots affect the evolution of expressive practices of the relational and cultural self - including that of gender - of the subjects who interact with them (Robertson 2010; Suchman 2011).
In continuity with the STS program, the paper proposes a dynamic and procedural reconstruction of geographies and ontologies in which the forms of relationship - gender, power, subjectivation and objectification, etc. - and the processes of differentiation (object/subject, female/male, nature/culture, science/society, human/non-human, etc.) are brought back to the focus of research on production and stabilization of technoscience

853 TECHNOSCIENTIFIC VISIONS IN ROBOTIC COMPETITIONS

Arne Maibaum (TU Berlin)

Visions of the future are also what guide scientific research. In science, these visions are typically embodied in the form of scenarios that outline in detail the situations in which a new technology might be used. In robotics, visions can be found prominently in the objectives of robotics competitions, for example in the " Final 2050" of the RoboCup. These visions shape the scenarios that are laid out in the competition rules.
In my talk, I will show how these long-term visions become manifest in tangible reality by looking at how the competition rules have evolved over the years.
In doing so, I draw an oscillation between alignment with long-term scientific visions and engineering focused on practical and concrete solutions. Particularly evident is the typical pattern of reduction and expansion of environmental complexity that characterizes the epistemic process in robotics.
With these insights, I pose the question of which players are able to set the visions and thus the objectives of the competitions, and what implications arise when these are commercial or military stakeholders, as in the examples of the Amazon Picking Challenge or the DARPA Challenge.

Room N118 - Panel 020.SITUATING ETHICS: HOW NORMATIVITY SHAPESHIFTS AS TECHNOSCIENCE TRANSMOGRIFIES

Tess Doezema (University of Vigo)
Madisson Whitman (Columbia University)
Geneva Smith (Dartmouth College)

As technoscientific developments and practices are taken up and adapted in new contexts, how do normative frameworks of governance and social values move with them? Debates tend to focus on whether there exists or should exist a special domain of ethics for certain technologies, for example nano-ethics (Swiestra and Rip 2007) or AI/ML (Greene et al. 2019). While some look at traveling models more generally (Pfotenhauer and Jasanoff 2017; Delvenne and Rosscamp 2021), STS has paid less attention to how ethical, moral, political, or other normative frameworks travel alongside or depart from technoscientific developments as they move from one space to another. What is borrowed, changed, and created anew when routines of normative sense-making are constituted in spaces where they are seen as lacking? For instance when ELSI frameworks travel away from their human genetic, national, and institutional origins, or bioethics are applied to more-than-human life forms? Or when RRI and models of participation are reproduced in settings outside of culturally and institutionally stabilized traditions of liberal democracy (Frahm et. al. 2021)? Or in shifting interactions in more-than-human worlds and shared environments (Whyte and Cuomo 2017)? Or ethics out of time and place, where the authority of ethics meets refusal and contestation (Benjamin 2016)?

We invite papers investigating the movement, translation, and elision of ethical frameworks and normative discourses. Abstracts might consider:
-The perceived need for ethics of a particular kind in some spaces and not others
-Rigidity of framing devices that steer normative deliberations around specific kinds of technologies
-How normative frameworks transform or maintain particular configurations when applied to human applications versus non-human applications
-How notions of responsibility are translated between disciplines and applications
-Ways the increasingly popular imperative of “public engagement” is differentially instantiated
-Mobilization of ethical discourses in the service of particular objectives

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Session 1

522 THE ETHIFICATION OF ICT GOVERNANCE

Niels van Dijk, Free University Brussels (VUB)

Several legal, policy, academic and corporate discourses in the European governance of information and communication technologies have been resorting to ethics, amongst which those of the European Commission. The proliferation of invocations of ‘ethics’ within these discourses, especially concerning the recent debate on (the regulation of) Artificial Intelligence, can be referred to as an ‘ethification’ phenomenon. This presentation aims to elucidate the benefits and drawbacks of the ethification of ICT governance, and its effects on the articulations of law, technology and politics in democratic constitutional states. First, we will discuss a mapping to locate where the ethics work is being produced in the EU and different types of ethics will be differentiated on this basis. Second, the ethification phenomenon will be analyzed through the concepts of boundary and convergence work. Here we find that ethics is presented as a ‘normative glue’ between interests of different practices involved

in ICT governance (e.g. computer science, technology development, politics, public participation) to reach a common goal, but also obfuscates boundaries to claim autonomy from law and legislation and to exclude forms of non-genuine ethics. Lastly, we will raise questions about the nature and constraints of ethics as an epistemic 'practice' within this broader ecology of practices (Stengers) involved in the governance of ICT technologies. Here we will take up the issue of ethical expertise in relation to the question of representativeness, and the issue of (a lack of) epistemic and process checks & balances on ethical work. This leads to a discussion of current ethical initiatives coming to constitute a new kind of normative rule-making beyond the rule of law.

380 TRAVELLING WITH RRI TO THE GLOBAL SOUTH: MOBILISING SYMMETRY

Frahm Nina (Technical University Munich, Department for Science, Technology and Society) Mamidipudi Annapurna (Max Planck Institute for the History of Science)

In this presentation, we reflect on the tensions that arise for the STS researcher in mobilising RRI in the Global South. We posit that understanding and practicing RRI as universal governance model that can easily be transferred from the desks of STS researchers and halls of European policymakers to local contexts repeats linear models of knowledge and technology transfer long criticised by scholarship in STS. Two major tensions serve as a baseline for our reasoning: One along the North–South divide, the other among policy frameworks and STS theory. Our arguments are illustrated through a two-year research project on the 'Responsible Production of Biogas in India', which was funded by the Dutch research council Nederlandse Organisatie voor Wetenschappelijk Onderzoek through its Platform for Responsible Innovation (NWO-MVI). Addressing research as one of the many practices of knowledge-making, our lens is turned to ourselves, the researchers—not only as analysts but also as actors among many others in finding responsible ways to innovate the recycling of rice straw in India. We claim that by mobilising a basic tenet of STS—the principle of symmetry—in knowledge production, we can facilitate the recognition, circulation and negotiation of plural epistemologies through which responsible innovation systems might emerge in local contexts. When mobilising RRI as an invitation for researchers to think and act on local problems, we need to ensure that our heuristics, tools and principles do not exclude the manifold epistemologies—both powerful and vulnerable—that must work together to make innovation responsible. We propose that symmetry is a constructivist principle worth guiding our thoughts and actions.

805 CONSTITUTING THE ETHICS OF PLANETARY SALVATION

Tess Doezema (Autonomous University of Barcelona)

How do outsized performative practices of hype and promising—which embed distinct normative visions of how the world should be—sit in relation to official sites of obligatory normative oversight such as ELSI and ethics committees? This talk takes the Earth Biogenome Project (EBP) as a case to examine how the dynamics by which routinized practices of 'doing ethics' are drawn on and reproduced in large-scale scientific projects. These are constituted in relation not only to a sense of precedent and performance of good scientific practice that ELSI committees offer, but are also advanced as serving key functions in realizing the good futures articulated in project descriptions and funding pitches. The EBP is an ambitious project aimed at sequencing the DNA of all life on earth. Like the Human Genome Project, on which it is discursively modeled, its leaders describe its raison d'etre as simultaneously revolutionary and salvationary. The project is routinely framed as essential for human survival: both in the creation of material biological abundance and to counter environmental destruction. Examining the EBP, I draw out the broader significance of how coproduced normative and ontological premises that underlie scientific design shape the concepts and practices of ethics that are delineated as the remit of ethics and ELSI committees.

1004 INFRASTRUCTURAL CONSENT: IMAGINARIES OF INFORMEDNESS IN US ABORTION POLITICS

Elizabeth Dietz (Arizona State University)

In the United States, the 2008 Prenatally and Postnatally Diagnosed Conditions Awareness Act required that people whose newborns and fetuses had been diagnosed with genetic conditions receive accurate, up-to-date information about the range of outcomes possible for life with those conditions. The passage of this bill, known also as the Kennedy-Brownback Act, was shepherded by rhetoric about the importance of its sponsors' ideological opposition: Ted Kennedy was one of the Senate's most pro-choice (and therefore pro-abortion) advocates, while Sam Brownback was one of its most pro-life (thus, anti-abortion) members. Their co-sponsorship lent credibility to widespread claims that the act was not about abortion: instead, it was only to ensure that people, at times of crucial reproductive decision-making, had accurate and useful information about disability they might welcome into their lives.

Subsequent lawmaking that follows the Kennedy-Brownback Act's model of informed consent was, however, explicitly aimed at limiting access to abortion by requiring waiting periods, fetal ultrasounds, and receipt of information about fetal pain. Pro-abortion advocacy, though, has also tended to argue that informed consent is fundamental to decision-making about abortion, seeing information about pregnancy risks, termination procedures, and adoption options as the ethically required predicates for free reproductive decision-making. These opposing frameworks diverge about what choices ought to be available regarding pregnancy termination, but crucially, converge on the political power of the authorizing relationship between informedness and consent. I explicate the work that informedness is made to perform (rather than focusing on the information's veracity),

which reveals informed consent to remain undisturbed as a framework where ideologically opposed advocates agree on its usefulness. By situating the Act within the reproductive politics that rhetoric surrounding its passage worked to deny, this paper theorizes informed consent to be an infrastructural political technology, available for mobilization toward disparate imaginaries of justice.

741 ON INTERPRETIVE SHIFTS OF TECHNICALLY MODIFIED BODIES

Toni Garbe Institut für Soziologie, Johannes Gutenberg-Universität Mainz

People extend their bodies with technology. Some of the concepts are still in the distant future or science fiction. Other concepts, such as prostheses or NFC chips, already exist in the present. At the stage of future design, modified bodies often appear alien and are ethically problematized. In the future, the bodies stand for the exotic, the other, the posthuman. Modification is considered unnatural enhancement. In contrast, in the present modified bodies increasingly experience a de-problematization and normalization. I am interested in the shift in interpretation that happens to technically modified bodies when they are transformed from a draft of the future into the realized present. How are modified bodies categorized differently in the future and in the present? For my question, I take the modified body as an object open to interpretation. My thesis is that in distant futures, a strong exoticization of new bodies is emphasized because in order to construct a vision of the future, the deviation from the current present must be emphasized. If the concepts of new bodies are to be implemented in the present, they must be made connectable to the current present and they must be staged differently to do so. Empirically, it becomes apparent that the bodies are often placed in a medical context, so that modification with technology appears as a legitimate therapy. In this way, the body does not appear in the present as posthuman, but continues to be considered human with the attribution of disability. The thesis I would like to present for discussion is part of my dissertation, which I am preparing in the context of the Collaborative Research Center 'Human Categorization'.

Room N110 - Panel 025. DOES SCIENCE PERPETUATE CRISES? HOW RESEARCH FIELDS CONTRIBUTE TO CHANGE OR CONTINUITIES IN TACKLING SOCIO-ECOLOGICAL CHALLENGES

Susanne Koch (Technical University of Munich; Stellenbosch University)
Sarah de Rijcke (Centre for Science and Technology Studies (CWTS), (Leiden University)
Sarah Rose Bieszczad (Centre for Science and Technology Studies (CWTS), Leiden University,
Judit Varga, Centre for Science and Technology Studies (CWTS), Leiden University

Science is ascribed a transformative role in tackling today's multiple, interrelated socio-ecological crises. According to prevailing narratives and imaginaries in high-level documents (e.g. the Global Sustainable Development Report 2019), generating knowledge, providing evidence, and leveraging innovation stimulates the creation of pathways for tackling challenges like climate change, deforestation, soil degradation, and biodiversity loss both on land and underwater.

Yet, despite the huge increase in available scientific knowledge, these crises persist, with some even worsening. Oftentimes, this paradox is explained through the complex science-society relationships and intricacies of science-policy interactions. Recognising these explanations as central but insufficient, this panel addresses the paradox from a different angle, shifting the spotlight 'inwards': (To what extent) do scientific fields perform their role as drivers of change in times of crisis? Or are they, perhaps, driven by these demands for reactive change instead? How do structural traits and practices of scientific fields contribute to their role in fostering continuity or change? How does the knowledge they generate challenge or stabilize governance arrangements and policy paradigms that have so far struggled to bring about transformation? And how are governance arrangements themselves disruptive or insistent forces?
The panel seeks to provide a space for a critical theoretical and empirical reflection on how and why scholars – including ourselves – from different research fields might contribute to some "striking forms of continuity" (conference theme abstract) in the politics of techno-scientific futures, contrary to their and our own intention.

Session 1

674 SCOPE OVER DEPTH: THE INTEGRATION SPECIALIST AS A SCIENTIFIC ACCELERATOR FOR TACKLING DELTA RESILIENCE

Nikki Brand (Delft University of Technology/ Resilient Delta Initiative)

In 2015, Nature championed interdisciplinary science as a means 'to save the world'. However, science is also associated with perpetuation of crises, through its dominant mode of monodisciplinary knowledge production (Fazy et al., 2020; Intrepid, 2014). And while counterbalancing knowledge fragmentation by inter- and transdisciplinarity (ITD) has been academic policy for decades, progress has been slow, and many ITD-efforts are labelled as window-dressing (National Academies, 2015). Many prejudices appear to exist between the natural sciences and the social sciences and humanities, where the latter are accused of merely conceptualizing problems and the former of focusing on solutions only (Brown et al., 2015). Especially in a setting of 'wide disciplinarity', when specialisms from science, technology, engineering, math and medicine are combined with social sciences and the humanities (SHAPE-ID, 2020), a substantial 'integration void' can be expected
An intervention to bridge the integration void, is the adoption of the role of 'integration specialist' (Hoffman et al., 2021), i.e. an individual that leads knowledge integration in teams (Hoffman et al., 2017). This article discusses an experiment with integration specialists run by the Resilient Delta Initiative (RDI) in 2020. With the ambition to address the future resilience of urban deltas, two workshops (called the 'methodology-pilot') brought together 10 professors from STEMM and SSH in order to formulate joint research. In a series of assignments, their discussions were streamlined by 2 integration-specialists, who delivered intermediate integration-reports for specialists to respond to. The pilot suggests potential for scientific roles that prioritize interdisciplinary scope over specialist depth. Additional benefit is that it acknowledges the heavy workload of integrative science, reduces reputation risk for specialists and provides proper recognition for interdisciplinary scientists in the academic reward system (Pfirman & Martin, 2010). Ultimately, genuine pursuit of knowledge integration may increase academia's chance to address rather than perpetuate crises.

386 CHANGE AND POLICY IN THE PROTECTION OF P. ORESISTANT KNOWLEDGES AND ENVIRONMENTAL HEALTH: KNOWLEDGE PRODUCTION, HISTORICAL CEANICA

Jose A. Cañada (University of Exeter)

Posidonia Oceanica is a seagrass endemic to the Mediterranean that plays a key role in the ecosystems of the Balearic Islands (in Spain). P. Oceanica meadows contribute to oxygen production and carbon removal; are a refuge for marine animals; and contribute to regenerate the beach-dune ecosystem that shapes the Balearic coast. Although P. Oceanica is not in danger of extinction, there has been significant regression in its presence in the Mediterranean, which together with its slow growth rate, has created concerns about its future. This has

led to recent policy initiatives for its protection from anthropogenic pressures in the Balearics, most of them associated to the mass tourism economy that the islands depend on. Although the tourism industry has evolved continuously during the last century, narratives of change and degrowth clash with conservative policies that argue that an economic change is not viable or desirable, defending the status quo and, as a consequence, inaction in front of environmental degradation. The paper argues that temporal dynamics of historical inequality towards certain collectives have produced resistant knowledges that challenge dominant understandings of the local economy and environmental conservation. Resistant knowledges about the environment have been part of islands' sociopolitical landscape since the emergence of environmentalist groups in the 70s. However, their continued demands for sustainable policy have been dismissed as naïve by conservative actors and the private sector, who promote an imaginary of infinite growth, and so the capacity to engage in social and political change has been limited. The paper combines documentary analysis with fieldwork in the Balearics following the work of researchers and NGOs to understand how the knowledge they produce contributes to change or perpetuate conservation policies. The paper provides empirical illustrations of how environmental policy and action are affected by temporal dynamics of historical inequality in knowledge production.

362 ROUGH SEAS - MARINE SCIENTISTS IN THE MIDST OF ECOLOGICAL CHALLENGES

Schönbauer Sarah (CWTS Leiden)

A plethora of global challenges, such as plastic pollution, marine acidification or climate change, are reported to have a dramatic impact on environmental and human health. These challenges have been critical to the establishment and development of marine science. Marine science represents a scientific field that has witnessed such changes early on, while also developing field-specific narratives that portray scientists as passionate trailblazers and eco-warriors in the midst of ecological crises. Marine science also has a long history of exploring and acting on socio-ecological change and is a field that has long been involved in policy paradigms focused on environmental challenges. However, while marine scientists aim to drive policy change, they are simultaneously dependent on, for example, research infrastructures and field-specific professional paradigms. In this talk, I will provide insights into how marine scientists work in this field of tension between driving change and structural dependencies.
In particular, I will explore how scientists address environmental change in their daily work, public appearances, and self-representations, and how they do so vis-à-vis (shifting) political paradigms and field-specific realities.
This presentation will feature insights into my study of a renowned German marine science institute. To this end, I draw on interviews with scientists and analyses of public appearances, e.g. roundtable discussions, homepages and policy reports. I show that investigating marine scientists and their work provides important insights into challenges of a scientific field, its research and how scientists position themselves in relation to socio-ecological transformations. This talk will raise questions regarding the social, political and epistemic dimensions of scientific work and position. It will also reflect on the role of scientists as potentially disruptive force or as preservers of continuity in today's political constellations aimed at ecological transformations.

982 DEEP MATTERS: HOW DEEP SEA RESEARCH VALUES

Sarah Rose Bieszczad (Centre for Science and Technology Studies, Leiden University)

The deep sea is a unique place and the research conducted both in and on the deep ocean faces particular challenges, such as access to resource-and-collaboration-intensive infrastructure for field access and data collection. Often labeled as 'blue-sky' or 'basic' research, deep sea research and researchers are thought of as 'distant' from societal concerns. Yet, increasing calls upon the fields of ocean science, by the UN Decade of Ocean Science and similar initiatives on both European and national levels, aim to provide solutions to grand societal challenges, e.g. the declining health of the ocean and climate change. These initiatives are reflective of both larger shifts in evaluation practices towards valuing impactful, interdisciplinary, solution-oriented research and growing societal concerns to address our planet in crisis.

These steering efforts to address the health of the ocean and climate, may create tensions with other benchmarks for scientific quality (e.g. excellence or global competitiveness). Arguably, research in and on the deep sea faces hurdles when connecting to societal concerns, requiring active value creation, articulation and management by researchers in the fields. Through interviews and analysis of strategic documents of European marine institutions with deep sea research profiles, this paper will examine how deep sea researchers, embedded across various national, institutional, and field contexts, navigate multiple, potentially incongruous orders of worth while simultaneously attempting to create congruence throughout their own research choices, knowledge production practices and lives in a world in crisis.

530 TOO ORTHODOX TO BE TRANSFORMATIVE? AN EXAMINATION OF FOREST POLICY RESEARCH AND ITS ROLE IN TACKLING THE DEFORESTATION CRISIS

Susanne Koch (Technical University of Munich) Camilla Tetley (Technical University of Munich)

"World's forests under threat from economic and environmental crises" – this is how the UN Department of Economic and Social Affairs promoted its Global Forest Goals Report 2021. Similar headings have been used for decades to describe the state of the world's forests. Since the 1980s, deforestation and forest degradation persist although much is known about underlying causes and drivers. A substantial part of this knowledge is delivered

by the interdisciplinary field of forest science; many of its members actively engage in communicating concrete recommendations on how to bring about change. Despite these efforts, however, the situation has not much improved.

In this paper, we seek to explore what may prevent scientific fields from being transformative forces in socio-ecological crisis. Focusing on forest policy research as exemplary case, we look into field-specific structures and prevailing habitus, understood as shared patterns of perception, valuation and understandings of doing science, that tend to sustain and support existing governance approaches, even if these have not (yet) brought about change. As the terms we use indicate, our perspective is theoretically shaped by Bourdieu's sociology of science, which is still rarely used in STS, despite its potential for examining how the social and the epistemic in science relate.

Insights from our on-going research suggest that structural and habitual specificities make forest policy research a rather orthodox site of knowledge production – in that it doesn't fundamentally challenge basic paradigms of the sector it is concerned with. Drawing on empirical data generated by conference ethnography and interviews, we identify an objectivistic understanding of scientificity coupled with an affective identification with forestry praxis as features that account for the orthodoxy observed. We suggest that this coupling not only creates tensions, but also hampers forest policy research to reach its full potential as transformative force in crisis.

Room N108 - Panel 028 TECHNO-POLITICS OF INTEROPERABILITY

Silvan Pollozek (European New School of Digital Studies)
Jan-Hendrik Passoth (European New School of Digital Studies)

In recent years ‘interoperability’ has become a powerful term and an important matter in different domains of national and EU policy. In the name of interoperability, new regulations have been adopted (Leese 2020), new EU agencies (e.g. eu-LISA) have been created (Trauttmansdorff & Felt 2021), information and data systems have been harmonised, and institutions have been reordered (Pelizza 2016). Yet, when looking into different domains of governance, notions of interoperability differ greatly in regard to the socio-technological imaginaries and futures they produce, the human and non-human actors they bring together, and the issues and critiques they assemble.
For instance, in the domain of security, migration and border control interoperability has been framed as a political strategy to overcome siloed databases in order to spot "irregular migration" and "terrorist activities" (EU Comm 2019) by making interconnected biometric databases accessible via search portals. Critical voices have stressed the extension of state power, new forms of surveillance, data and function creep, and serious consequences for certain populations that face new forms of discrimination and criminalisation. In contrast, interoperability in the domain of messenger services in EU-policy discourse has been related to "open standards" that could open up locked-in messaging systems like Whatsapp, go against market leaders like Facebook, support bottom-up initiatives and prevent 'failed innovations'. Here, interoperability seems to be shaped along the lines of market power, competition and innovation. In the domain of developing data infrastructures "by Europe, for Europe, and beyond", interoperability has been related to "European values", such as "data sovereignty", "data privacy", or "transparency" that make sure that data is collected, processed and shared "in an environment of trust". Not only does interoperability promise the collaboration between companies, research institutions, associations, and administrations but also foster the engagement of open-source communities, civil society, and citizens.
In this panel, we seek to shed light on the techno-politics of interoperability regarding data practices and infrastructures in a comparative manner. We invite contributions on the above mentioned domains and beyond that study
the fields and arenas in which struggles and issues around interoperability arise (e.g. actor-networks, discourse formations, reshapings and reconfigurations through time),
their power dynamics (e.g. the (re)articulation of claims, the (re)positioning of actors, the sociotechnical imaginaries and futures, and the silencing of voices), or/and
the material (re)configurations they imply (e.g. the (re)shaping of technologies, the (re)ordering of institutions or the (re)configuration of practices).
Welcome are both empirical case studies (historical, ethnographic, discourse analytical etc.) and conceptual pieces.

Session 1

710 A FOLDED ECOLOGY OF INTEROPERABILITY WORK: PERSPECTIVES FROM SOCIO-TECHNICAL SYSTEM DESIGN IN TRANSLATIONAL SCIENCE

Andrew Hoffman, Interdisciplinary Hub for Digitalization & Society (iHub), Radboud University

Interoperability has emerged as a normative good in scientific research (e.g. Wilkinson et al. 2016) and across societal sectors. However, a focus on the technical facets of harmonizing data/tools is often given primacy over considerations of perhaps less visible modes of interoperability upon which this technical work relies; still others to which it gives further rise; and the broader political and socio-epistemic dynamics that are at play across these instances of interoperability. To address this lacuna, this paper draws from ongoing ethnographic fieldwork with the Biomedical Data Translator consortium in the US, a publicly funded project whose members are currently developing an automated question-answering system for complex queries in the domain of translational science. In particular, we outline an approach to investigating the aforementioned dynamics in terms of a ‘folded ecology of interoperability work.’ In so doing, we focus on three interlinked scales of interoperability and their stakes for collaboration, resource harmonization, and knowledge production: (1) human interoperability (e.g. Lee et al. 2006), which in this setting takes the form of a ’Team Science’ approach and serves as a base-layer upon which other modes of interoperability work are carried out; (2) semantic-syntactic interoperability (e.g. Heiler 1995), where the integration of data, tools, and messages is facilitated by a myriad of standards and conventions; and (3) evaluative interoperability (Kornberger et al. 2017), wherein different components of the Translator ecosystem provide unique rankings/scorings of different pieces of information as they move through the ecosystem, but where sometimes-competing modes of evaluation may need to be adjudicated in some centralized way – thus leading designers to grapple with decisions about how to seamlessly reconcile or otherwise seamfully represent (Inman & Ribes 2019) the heterogeneity of ranking/scoring, and the ultimate implications of these different approaches vis-a-vis the shifting practices and users in data-intensive translational science.

39 TECHNO-POLITICS OF THE INTEROPERABILITY OF ARCHAEOLOGICAL DATA (WORK)

Isto Huvila (Uppsala University)

Archaeological investigations produce large amounts of data on annual basis around the world. The material is extremely heterogeneous. It differs by country, region, investigation project and the age of documentation. It consists regularly of textual, visual and numeric information and is generally standardised to a highly varying degree. A lot of effort and resources have been invested to make this heterogeneous material accessible and available for research and public use — and to make local information systems and individual datasets interoperable with each other as a part of national and international data infrastructures to allow larger-scale analyses and to promote trustworthy and transparent processing of the data as a public good.
This presentation inquires into the underpinnings of the struggles of making of the interoperability of archaeological information systems and datasets to happen on the basis of empirical research conducted in the context of a larger ERC-funded research project CAPTURE on the documentation of archaeological and scholarly informationmaking. The findings suggest that (the lack of) interoperability is a product of techno-politics of a much large constellation actants than a mere struggle of establishing and negotiating appropriate data standards and developing and deploying technical infrastructures for archaeological data. While much of the contemporary efforts focus on advancing the interoperability of data infrastructures and datasets by harmonisation and standardisation, much of the issues relating to their perceived lack of interoperability can be traced back to the (lack of) hospitality of different varieties of archaeological datawork—in different countries and regions, in different times, epistemologies, thought-collectives, stages of archaeological information process and beyond—and their underpinning techno-politics.

375 ALL THE CREATURES GREAT AND SMALL: FRAGMENTED ANIMAL BIOBANKING IN POST-EU GREAT BRITAIN

Veit Braun (Geothe University Frankfurt am Main)

Over the past decades, biobanks have been established across Europe to address the loss of biodiversity, secure access to research material or channel the flow of genetic resources into breeding programmes. One key function of biobanks is to facilitate the flow of samples and data across institutional, disciplinary and national boundaries by making their material compatible with different uses and norms. This talk explores the limits of such endeavours in the case of a complex network of animal biobanks in Great Britain. Initially designed to bring together universities, museums and zoos, Great Britain and the EU, information and materials under one roof, the biobanks find themselves torn between conflicting imperatives, regulations and organisational trajectories, which pose a challenge to the free circulation of samples.
Consortium partners have different degrees of operational freedom, which does not allow them to participate equally in biobanking activities. To complicate things further, the UK's departure from the EU has effectively cut off several institutions and regions from the network. Finally, animal material is subject to various international and national regulations that severely limit its ability to cross national borders. As a result, the network has become more fragmented, with some biobanks operating in geographically and materially limited areas while others have reduced their cooperation or are about to cut ties altogether. The case highlights the complex research geographies in a Europe where harmonisation, standardisation and integration are increasingly challenged by centrifugal forces.

873 BRUTALISM MEETS SOCIO-ECOLOGICAL TRANSITIONS: THE CASE OF TRAIN INFRASTRUCTURES

Stefan Laser (Siegen University)

In the face of climate and environmental crises, political and activist actors are increasingly turning to transformative strategies. However, more knowledge is needed about the infrastructural affordances of socio-ecological transitions. This also calls for unfolding the heterogeneous experiences with built infrastructure.
This paper discusses transitions of rail cargo transport in Europe and Germany in particular. The transformation sector needs to reduce emissions and energy dependencies, tackling its vast built infrastructure. Yet infrastructures are not monolithic entities; they emerge from relations and practices. They are constantly changing and depend on maintenance work. In pushing this relational lens, the article argues for remembering the material history and brutalism of train infrastructure (Truscello 2020). Rather surprisingly, progressive visions draw a favourable picture of the railway, ascribing a liberating and almost weightless power to these mighty machines. However, the construction and maintenance of this infrastructure must be coupled with the history of cheap labour and resources, drilling power, land use, fossil capitalism, colonialism and the Holocaust.
To what extent do railway engineers and workers consider problematic ecological legacies, and what kind of knowledges and experiences are incorporated into transformation efforts? The article discusses this question through a European initiative (called 'DAC4EU') that is testing a new coupling standard in the cargo sector that is formulated according to ecological aspects, aims to improve energy efficiency and grapples with the dominant century-old standard. The case study serves as a vantage point to examine the entanglements of heterogeneous industrial and political actors – and the ecologies of the Anthropocene. The research is situated in the German Collaborative Research Centre "Media of Collaboration". It draws on a pragmatist reading of (Post-)Actor-Network Theory and uses document analyses, interviews and ethnographic observation of test drives of the system. With "brutalism", the contribution explores the ambivalence of transitions and more-than-human cooperation.

Room N112 - Panel 034. PHARMACEUTICAL TRANSFORMATIONS: ADVANCED THERAPIES, PERSONALIZED MEDICINE AND THE REMAKING OF HEALTHCARE

Sarah Wadmann, The Danish Center for Social Science Research,
Amalie Martinus Hauge, The Danish Center for Social Science Research,
Laura Emdal Navne, The Danish Center for Social Science Research,
Paul Martin, Department of Sociological Studies, University of Sheffield

From an era of chemical mass production, significant transformations in the pharmaceutical sector currently pave the way for biological 'niche' products. Advanced therapies, such as gene and cell therapies and tissue-engineered products, are on the rise while diagnostic techniques are devised to distinguish between patients in still more fine-grained ways. Different concepts are evoked to signify those changes, including personalized medicine, precision medicine, stratified medicine and 'orphanisation'.

These transformations spur hopes of new treatment options and the prevention of overtreatment. However, the advanced therapies come with unprecedentedly high pricing, evaluative challenges and new infrastructural demands. Along with the technoscientific developments, pressing questions about what may count as a 'reasonable price', 'acceptable evidence' and a 'fair distribution' of healthcare resources arise – and the answers have profound implications for patients' access to new therapies and may also impact patient identities and societal notions of solidarity and equity.

This panel engages STS scholarship on the social, ethical and economic implications of medical innovation. We invite papers that analyze current transformations in the pharmaceutical sector, discuss their implications or engage with innovative solutions to challenges of equitable access. Topics may include but are not limited to:

- Industrial innovation and pharmaceutical pricing
- Health technology assessment and drug coverage decisions
- Clinical treatment practices and rationing dilemmas
- Patients' engagement in knowledge production and the mobilization of patient communities

Session 1

105 AN INSIGHT INTO GENE AND CELL THERAPY IN CHINA FROM PERSONALISED IMMUNOTHERAPY FOR CANCER

Isabel Briz Hernandez, The Chinese University of Hong Kong

In recent years, Cancer Immunotherapy, especially Chimeric Antigen Receptor (CAR) T-cell therapy, has come to be considered a turning point in cancer and a promising new pillar for its treatment. In the scientific literature, CAR T-cell therapy is largely described as a revolutionary new medicine with the potential to target virtually every cancer type. This new therapy is a personalized living drug that aims to enhance the potential of the immune system. In 2017, two CAR T-cell products were approved for commercialization by the Food and Drug Administration (FDA) in the US and since then the number of clinical trials on this therapy has increased significantly worldwide. China, immersed in its transition to a knowledge economy and focusing on biopharma and translational science as key sectors of development is betting strongly on the potential of CAR T-cells to boost its economy and the wellbeing of its citizens, and already hosts the highest number of trials on this therapy in the world. In June 2020, there were 357 trials in China, 256 in the United States, and 58 trials in other countries (Wei et al. 2020). Based on 15 months of fieldwork in China on a biotech company running clinical trials on CAR T-cell therapy, and in the hospitals that host these trials, in this paper I explore the growing gene and cell therapies market in China by illustrating how small biotech companies navigate regulatory systems and state initiatives to promote the biotechnology and pharmaceutical industry.

399 PRIVATE, PRIVATE, PUBLIC? PAVING A DEMOCRATIC ROUTE TO PROTECT DATA DONORS AND THE COLLECTIVE GOOD IN GENOMICS – A CASE STUDY FROM IRELAND

Ilaria Galasso, University College Dublin, Susi Geiger, University College Dublin

Whole-genome sequencing projects are flourishing around the world to study health and disease onsets and underpin the development of precision medicine.
Genomic data collection, management and use pose important ethical issues affecting both the potentially deriving health benefits and the data donors. These issues are amplified in cases where sequencing projects are privately owned and/or where conditions or ownership change after donors' consent.
In this paper, we trace the curious case of an Irish genomic project as a platform to think through the issues emerging when significant changes happen in the governance or in the leadership of a genetic project. We

scrutinize strategies to address those issues in order to maximize the health benefits to be reached through the research and to protect and respect the data donors.
This private company Genuity Science (formerly known as Genomic Medicine Ireland) received substantial public funding and assistance by the academic community to collect and sequence the genomes of 10% of the Irish population, but it was then acquired- together with the collected Irish data and biospecimens - by the US-based company HiberCell. Recently, calls have been made for HiberCell to sell or donate back the Irish genomes to the Irish state. We explore the opportunities and challenges around this call to 'bring the data home'.
We build on a framework of scientific democracy (Callon et al. 2001, Bucchi and Neresini 2008) to propose a democratic approach informed by and co-led with concerned actors: this includes the consultation of national and international experts in genomic and data ethics and governance (through in-depth interviews) as well as of Irish data donors and citizens (through focus groups).
We argue that effective consultation and involvement of the concerned actors can illuminate the way to conciliate participants' informed consent, legal requirements, ethical obligations, and the collective good.

852 INFRASTRUCTURES OF VALUATION: THE SOCIAL SHAPING OF INNOVATION TRAJECTORIES IN TISSUE BASED INDUSTRIES

Michael Morrison, University of Oxford, Edison Bicudo, UCL

Questions of value in the commercialisation of cell and tissue based technologies have been much debated. Existing social science accounts have alternatively posited the harnessing of cells' replicative capacities as a new source of value, by analogy with Marxist-inspired conceptions of value as accruing from labour, or have centred assetization, for example through intellectual property rights, as the primary mode of value extraction in the bioeconomy. Here we attempt to move beyond the impasse of these conflicting accounts, drawing on the field of Valuation Studies to focus on practices of valuation rather than the source of value. Our empirical material comes from two recent case studies of specific cell-based technologies, induced pluripotent stem cells (iPSC) and 3D printing of biological materials ('bioprinting'). Drawing on a mixture of qualitative interview data, primarily collected from UK-based firms working on one or both technologies, and desk-based analysis of the academic and grey literature on commercialisation of both technologies, we illustrate how commercialisation is undertaken mainly by small-to-medium sized firms, operating in the context of a range of pre-existing and entrenched infrastructures of valuation. These include the practices through which companies developing these technologies attempt to secure investment from Venture Capital firms and other sources, the legal mechanisms for submitting and having patent claims assessed, regulatory evaluation of novel medicines and medical devices, reimbursement of health technologies, and endeavours to establish a market presence, attract customers and generate revenue through various offerings. We posit that the trajectories of commercial innovation with iPSC and bioprinting can be understood as the outcome of firms' attempts to navigate these overlapping infrastructures of valuation, which each apply distinct practices of assessment and criteria of worth.

202 PATIENT ENGAGEMENT IN DRUG DEVELOPMENT: CONFIGURING A NEW RESOURCE FOR GENERATING INNOVATION

Olga Zvonareva (Maastricht University)

Rise of patient engagement is one of the ongoing significant transformations in the pharmaceutical sector. This paper focuses on the sudden interest to patient engagement (PE) in drug development, expressed in a growing number of calls to engage, novel organizations dedicated to changing the culture of drug development, and guidelines for directing and evaluating PE.
Not always apparent amidst the pledges to giving patients a voice, is an aspiration to reinvigorate innovation visible in statements that drug development can be made 'faster, more efficient, and more productive through systematic patient involvement' (Hoos et al., p.935). Analysis of documents, such as PE toolkits and event descriptions, and review of actual PE practices reported in the academic journals during the last 10 years, suggests an understanding of PE in drug development as an effort to find new avenues for increasing productivity amidst the concerns about the future of the current mode of drug innovating with its rising costs, inefficiencies, and high failure rates.
This paper highlights that increases in productivity are expected due to opening the industry-dominated processes of drug development to the unexpected. Patients' input included at all stages of drug development, as advocated by the PE enthusiasts, is to facilitate the emergence of surprises, unanticipated and unprecedented events as leads for further innovating. Reshaping of the relationships with patients along these lines represents and facilitates far-reaching shifts in conceptions of pharmaceutical knowledge production and patterns of value generation. At the same time, as the pharmaceutical industry has taken a central role in defining and promoting PE in drug development, most visible initiatives in the field focus on designing and disseminating standardized tools to ensure operational efficiency and scalability of surprise-generation. This paradoxical dual focus on the unexpected and standardization may lock PE out of more flexible and fruitful trajectories.

1044 PATIENT PERSPECTIVES ON BIOMARKER BASED DIAGNOSTICS AND THERAPEUTICS IN PSYCHIATRY

Flora Gossink, Radboud University, Lotte Krabbenborg

Precision medicine is presented as a promising approach to improve disease treatment, taking into consideration the individual clinical and biological characteristics. Important elements in the transition towards precision

medicine are biomarkers, which can be described as “defined characteristics measured as indicators of normal biological processes, pathogenic processes or responses to an exposure or intervention, including therapeutic interventions”. Psychiatry can be seen as an example of a personalized clinical approach as it is characterised by a descriptive way of diagnostics based at individual feelings, thoughts and behavior (descriptive psychopathology). In contemporary psychiatry the involvement of biomarkers is in an early phase and its added value, as well as its appropriate use, is a matter of debate. Besides, it brings sociological concepts such as the difference between illness and disease prominently to the fore: what defines a psychiatric diagnosis and who is in the position to develop such a diagnosis?
So far, patients’ needs, values and concerns in this remain underexplored. We conducted 16 in-depth semi structured interviews with patients who had at least two years of experience with mental health care. The aim was to uncover patients’ embodied experiences of having psychiatric diseases in order to elicit their views and concerns related to new biomarker developments.
Respondents indicated that they appreciate further scientific and technological developments towards more knowledge but for patients innovations in psychiatry should be accompanied by initiatives that aim to improve the image of mental disorders in society and take into account diagnostic consequences for social and economic circumstances. We will show to what extent patients’ perspectives correspond to and differ from perspectives of psychiatrists and pharma, and argue that their stories should become part of the medical and societal discourse in order to enrich deliberation and decision making processes on the value of biomarker technology for psychiatry.

786 THE UNCANNY PLAYGROUND. SCIENCE VS. NATURE

Sara Casartelli University of Rome La Sapienza

In 2007 the Australian performance artist Stelarc had a cell-cultivated ear surgically attached to his left arm. Around the same time, two cases in the UK opened the debate on the permissibility of aesthetic surgery to erase the physical features of Down's syndrome. Biohacking can be defined as changing one's body chemistry or physiology through science and self-experimentation. Biohacking incorporates a wide range of practices, from nutrition, makeup, and clothes to enhance body functions, to altering one's body through plastic surgery and implanting cybernetic devices (Grau 2021). The everyday ubiquity of technologies that remake the human renders them commonplace and normalized (Haraway1991). In some cases, however, we find a productive unease that arises from the entanglement between humans and nonhumans. Frequently it is difficult to distinguish compliance from resistance, as human and non-human agencies fold into one another like a Moebius strip. Whilst robotic technology imaginaries demonstrate that we are eager and fearful of what our cyborg future will bring, we tend to forget the fact that cyborgs are already here. Drawing from the two empirical cases cited above, this paper proposes the concept of uncanny technoaesthetics (Leem 2021) to explore the technological, aesthetic, and political implications of biohacking practices and the robotization of the human body. The concept draws from Masahiro Mori’s “uncanny valley” theory, which describes the feeling of unease caused by robots that resemble humans too closely. Bringing Mori’s hypothesis into conversation with feminist science studies (Rhee 2013) the paper explores the shaping of the technoscientific futures by providing real-world materialization of the entanglement between the "natural" and "artificial", ultimately challenging the fixity of the human. Because to walk in the uncanny valley is to question the division human/robot in the first place, conceiving the human body not just as a battleground, but also as a playground

Room N107 - Panel 036 CARE-FUL DATAFIED FUTURES AND TECHNOPOLITICS OF CARE

Session 3

332 WORLDING AN APP: A STUDY OF DESIGN PROCESSES AND CONSTRUCTION IN THE GLOBAL SOUTH

Hannah Acutt (University of Pretoria)

How users integrate digital technologies like mobile apps into their everyday lives is well-documented in scholarly literature (Kusimba, 2021; Miller et al., 2021). The actual design and construction process of these apps is understudied, however. As apps increasingly form such an integral part of daily human interactions, I suggest that a study on design processes is valuable for revealing, amongst other things, the labours, relations, and forms of care that result in the end-product. Furthermore, the Global South is often not prevalent in the emerging discourse on technology and its construction, and typically the Global South is depicted only as a consumer of the technologies created in the Global North (Comaroff & Comaroff, 2012).
In researching the construction of mobile apps through a South African company, I am taking a situated and micro approach to the study of technology and datafication, which modifies the macro approach and seemingly totalising perspective produced by concepts such as data colonialism (Couldry & Meijas, 2019). Drawing on Haraway's (1988) arguments for a 'situated knowledge' that emphasise the importance of accountability and location in knowledge construction and, together with Puig de Bellacasa's (2012) suggestion of thinking with care, I work empirically and theoretically to 'world' an app. I am specifically interested in the processes of decision-making, conflict, and compromise that emerge in the building of an app in South Africa. By caring about the everyday labours of a specific company, I will be foregrounding, as Puig de Bellacasa (2012) argues, that caring is not a smooth or harmonious process, but rather involves "everyday practical doings that engage with the inescapable troubles of interdependent existence" (p. 199). Technologies like apps are often presented as seamless products that slid into existence; the construction of a technology emerges, however, through processes of decision-making, problem-solving, and negotiation (Vertesi, 2014).

138 INCLINATION AND THE AUTONOMIZING STRUCTURE OF CARE

Birte de Gruisbourne (Universität Paderborn, Germany)

In my talk I will define care as an affective, asymmetrically reciprocal, relational and autonomizing practice. With this definition at hand, I hope to capture the different tensions inscribed in caring relationships. Furthermore this definition will help to scrutinize different (on the first sight maybe not so caring) practices for elements of care and propose criteria for critique.
Described as an inclined relation care comprises an ontological fact and a normative claim. As relational beings we are always already differently inclined towards any other. But, inclination as an openness to „whatever may affect me from the outside world" (Cavarero 2016: 5f.) can also be normatively described as the virtuous posture of care.
While every relationship we label as 'care' includes affective, reciprocal and relational elements, I want to stress that successful or good care should include autonomizing elements as well. This is what inclination in Cavareros definition can help to understand: that by holding oneself inclinational one recognizes the other (be it human or otherwise) and by reacting to their needs, one supports or enacts their autonomy.
As introduced above, this inclined relationship is not merely intersubjective. This specific form of affectability (Affizierbarkeit) can also be traced through socio-technical relations, like the virtuosic scientist with their experimental system Hans-Jörg Rheinberger (2006) described so well. This means that also in epistemic practices like science some kind of autonomization through inclination is needed in order to let the epistemic thing speak for itself. I hope to show that my onto-ethical approach to the concept of care may help not only to better understand classic caring practices but also to scrutinize other practices which seem not so caring at first.
Adriana Cavarero (2016): Inclinations. A Critique of Rectitude. Stanford UP
Hans-Jörg Rheinberger (1997): Toward a History of Epistemic Things. Stanford UP

785 RESEARCHING AND DOING DEVICES ACTIVISM – REFLECTIONS FROM A PATIENT-INITIATED COLLABORATION ON DO-IT-YOURSELF ARTIFICIAL PANCREAS SYSTEM-RESEARCH

Henriette Langstrup (University of Copenhagen) Bryan Cleal (Steno Diabetes Center Copenhagen) Shane O'Donnell (University College Dublin)

In this paper, we want to reflect on our experiences as participants in a 4-year international and patient-initiated research consortium – the OPEN Consortium – dedicated to the exploration of the experienced outcomes of Do-It-Yourself Artificial Pancreas Systems (DIY-APS) among persons with diabetes (PwD). DIY-APS are non-regulated, digital and algorithmic treatment systems used by PwD worldwide without oversight and recommendation by health professionals. The use-practices are largely distributed and supported through a highly

active and activist online community – known under the hashtag #wearenotwaiting – and by the open-source sharing of innovative digital resources. A majority of the team in OPEN were PwD and active DIYAPS users.
Both the consortium and the larger online community can be seen as a form of Device Activism (Jansky & Langstrup forthcoming), highly engaged in shaping more care-full datafied futures for self-management. A future in which PwD potentially are granted more agency in relation to the devices and data through which they manage their disease and well in relation to the political and epistemic systems that shape their access to and lives with these devices. At the same time, the consortium, has also had to navigate and reimagine the territories of research and activism. The #wearenotwaiting-movement has both been hailed as the epitome of democratized innovation (demonaco et al. 2019) and criticized as elitist options for the tech-savy responisiblized digital consumer-patient (Kaziunas et al. 2017). While recognizant of these positions, we want to argue that OPEN has nuanced the debate and potentially given rise to new and more response-able interfaces between science and activism, between activism and health practice and between PwD and their devices in the emerging spheres of digital health.

139 CAREFUL (RE)VISIONS: TINKERING WITH ACADEMIC PRACTICES FOR ENGAGED RESEARCH IN DATAFIED EDUCATION

Jade Vu Henry (UCL Institute of Education)

Taking up Coopmans' invitation to 'turn a caring eye' (2020) on the ambivalences with my own past academic work, I revisit three publications which touch upon matters of care in the datafication of education (Henry 2018; Nicholls, Henry, and Dennis 2021; Henry and Oliver 2021). I describe how my positionality shifts from case to case, generating different methodological choices with distinct sets of tensions involving data, hardware, software, learners, teachers, and researchers. I discuss these movements and tensions in light of the need for a 'double vision of care' (Haraway 1988) – one which 'hold(s) together care as both a situated practice and an ethico-political commitment' (Lindén and Lydahl 2021). Drawing parallels between 'care-full' academic research and the 'moving evidence' of lay patient activists (Lindén 2020), I argue that conducting engaged research about, and as part of, datafied educational settings requires attending to how knowledge emerges through different assemblages of data, technologies, epistemologies, people, and affects – such as 'anger', 'frustration', 'powerlessness', and 'hope'. I suggest that maintaining a 'double vision of care' is a scholarly practice that need not be confined to a single paper or study. 'Seeing double' might also be achieved by tinkering with methods across several studies and through trans-disciplinary citation practices, bringing forth evidence that 'moves' more generatively amongst careful and critical scholars of education and data.

Room N113 - Panel 043. FUTURES OF ARTIFICIAL INTELLIGENCE IN MEDICAL IMAGING

Session 3

1021 TAMING THE HYPE; DOMESTICATING AI

Robin Williams (The University of Edinburgh) Hajar Mozaffar (The University of Edinburgh) Kathrin Cresswell (The University of Edinburgh)

There is a striking gulf between the aggressive claims being circulated about the capabilities of AI-based systems and the more mundane and modest achievements of real-life AI applications in medical diagnosis that have emerged in real life. HSS contributions, including regrettably much STS writing, have not adequately explored this gulf and have perhaps unintentionally reinforced the rhetorics of technology supply.
The application of AI in medical imaging/diagnosis struggles to resolve serious challenges.
1) regarding cost-effectiveness: the financial costs; time and work required to develop data sets and tools, conduct multiple trials and develop evidence needed to satisfy complex governance requirements. These costs remain prohibitively high in relation to available income streams.
2) regarding the performance and perceived trustworthiness of Machine-Learning-based algorithms. Performance degrades as systems are extended from carefully-curated training data sets to messier real-world contexts and as ground truths change over time.
AI-based diagnostic tools must be appropriated within professional and institutional structures and embedded within complex clinical workflows. Their successful development and deployment requires integration of clinical and computational knowledge. A key factor in many current initiatives has been the close collaboration between clinical specialists and AI/computing specialists (including many hybrid experts who have moved between fields) needed to effectively deploy technologies.
As medical AI struggles out of its current 'Trough of Disillusionment' early initiatives are beginning to stall. Smaller starts-ups are beginning to fail or to be acquired. It remains unclear how these competing demands of commercial profitability and scientific performance will be resolved. Will the baton pass to large firms with long pockets able to achieve economies of scope and scale? Or will other platforms emerge that can reduce the research and compliance costs and enabling a more diverse ecosystem in which AI is placed in the hands of health specialists and associated start-ups.

589 THE MICROBIOLOGICAL EYE. ETHICS AND ETHNOSCIENCE OF AI-BASED SOFTWARE DEVELOPERS FOR LABORATORY IMAGE ANALYSIS

Joaquin Yrivarren (Universidad Autónoma De Barcelona) Miquel Domenech (Universidad Autónoma De Barcelona)

What does it mean to have a good eye in microbiology? How does the good judgment and autonomy of laboratory workers change when interacting with an AI system capable of revealing or hiding new actants? These questions entail a key ethical issue about the present and future of the software-as-a-medical-device; especially, of AI applied to digital image analysis. Drawing on an ethnography conducted in the R&D area of an Italian company devoted to the automation of microbiology laboratory processes, we analyze the ethics of AI as a practice deploying itself through: the company's Digital Microbiology strategy; the day-to-day work of engineers developing AI-based software for image analysis; and how concerns, requirements and disagreements expressed by customers are addressed at different stages of software implementation. Mainly focusing on the discrepancies between software engineers and laboratory personnel about the best interpretative rules applicable to rare cases (micro-colonies and weak growth) evidenced by AI algorithms, we argue that engineers are ethno-scientists in practice, since their main interest is inductively grasp the laboratory knowledge system, and their main assumptions is that laboratories are, above all, the sum of their classification rules. However, when controversies about these rules arise or when translating some laboratory practices into an "if/then" logic is difficult and time consuming, then the double power of AI, representative and performative, comes to the forefront, and with it, the boundary between what may be seen and what may not, between what can be discussed and what remains a black box. Lastly, we discuss common perspectives on the ethics of AI within the company, as well as some drawbacks in the FDA’s good machine learning practice for medical device development.

296 BEYOND IMAGES: A CASE STUDY OF HOW LENSIONS ARE AUTOMATED RECOGNISED

Xiao Yang (University of Edinburgh)

Past research on AI in healthcare has tended to take a macro view. We want to look at a specific case to explore how MRI images are pre-processed, recognised, automatically classified and analysed in AI experiments. In this particular experiment, the patient's images are collected, anonymised and then subjected to a series of pre-

processing tasks, including brain extraction, adding axes and so on. Subsequently, the White Matter Hyperintensities (WMH) are recognised using machine learning models. Of particular note is a competition for the automated identification of WMH, where participants can download their data from the website and use it for training and testing their algorithms. The best recognition scores so far still do not exceed manual recognition, but the competition allows for a rapid translation of experiments into paper results, thus accelerating citation in the field. After the competition, non-public databases were introduced, thus adding more domains to the problem. A clearer understanding of AI experiments in biomedicine would enable a more effective clarification of the operational processes in this multidiscipline and explore the causes and possible consequences of ethical issues such as privacy, bias and fairness, leading to more constructive references for epistemological and practical challenges.

185 THE PROMISE MAKERS: THE ROLE OF VENDORS IN REALISING ARTIFICIAL INTELLIGENCE IN RADIOLOGY PRACTICES

Mari Serine Kannelønning (Oslo Metropolitan University)

Artificial Intelligence (AI)-based technologies are expected to play an essential role in providing sustainable healthcare systems in the future (Morley et al., 2020; Aung, Wong, & Ting, 2021). These expectations typically include promises of technologies that can automate repetitive tasks and support healthcare professionals in making decisions, improving their work efficiency, and enhancing treatment quality and patient safety. Such technological promises are crucial to mobilise the necessary resources for innovation and technological change (investments, regulations, policies, prospect users etc.) (Joly, 2010).
As the introduction of AI in healthcare is at an early stage, we cannot say exactly how or whether the technological promises will be fulfilled. By following a dialogue-based procurement process led by a Norwegian hospital trust aiming to buy off-the-shelf AI solutions for radiological image analysis, this study explores the dynamics in play as technological promises approach actual implementation. Taking primarily a vendor perspective, the paper draws on elements from the Sociology of Expectations especially related to technological promises and promise makers (Borup et al., 2006; Brown et al., 2000; van Lente, 2000), as well as concepts from Actor-Network Theory, such as ‘problematisation’ and ‘interessement’ (Akrich et al., 2002; Callon, 1984; Joly, 2010).
Based on data from observations of meetings and interviews, I investigate how vendors work to convince the hospital stakeholders to stay interested in their solutions. The paper analyses the troubled landscape of negotiations and translations unfolding as the “promise makers” meet with the hospital’s procurement team and radiologists over time. In conclusion, I argue that the obstacles emerging in the encounter between technological promises, hospital organisations and radiology practices build on a misalignment of expectations, interests and needs.

Room N111 - Panel 059 ARTIFICIAL INTELLIGENCE CONTROVERSIES

Torben Elgaard Jensen (professor) (TANTlab, Department of Culture and Learning) Aalborg University, Denmark
Anders Kristian Munk (associate professor, lab director) (TANTlab, Department of Culture and Learning) Aalborg University, Denmark,
Noortje Marres (professor) (Centre for Interdisciplinary Methodologies, Warwick University, UK)

A new spectre is haunting Europe - a spectre that currently goes by the name Artificial Intelligence, or more specifically Artificial Intelligence based on machine learning algorithms. Enthusiastic AI-sponsors and developers raise the hopes of great improvements in areas such as medical services, traffic safety and sustainable management of resources. Meanwhile political and ethical concerns grow over uncontrollable bias, privacy transgressions and the ubiquitous spread of AI into the fabric of society. And while more specific promises and risks of AI are being debated, AI is also increasingly related to wide-ranging discussions about Europe's economic competition with China and the US, dangerous future arms races, and even the very future of humanity.

The aim of this panel is to bring together theoretical, methodological, and empirical efforts to grapple with the vast and entangled spectre of AI and of societal controversies about AI.

Session 1

432 PUBLIC IMAGINARIES OF ARTIFICIAL INTELLIGENCE: CONCEPTUALIZING PUBLIC DEBATES ABOUT AI

Saba Rebecca BRAUSE, Department of Communication and Media Research (IKMZ), University of Zurich, Switzerland, Christian KATZENBACH Vanessa RICHTER, Centre for Media, Communication and Information Research (ZeMKI), University of Bremen, Germany, Yishu MAO (Max Planck Institute for the History of Science, Berlin, Germany) Mike S. SCHÄFER (Department of Communication and Media Research (IKMZ), University of Zurich, Switzerland) Jing ZENG (Department of Communication and Media Research (IKMZ), University of Zurich, Switzerland)

Artificial intelligence (AI) is a key technology of contemporary societies. At the same time, it raises both high hopes and strong fears in the public imagination. As machine learning-based technologies are transforming sectors such as health, mobility, and communication, and are becoming part of our everyday lives, AI has become the object of extensive public debates regarding its social, economic, political and ethical implications, among others. These debates are a crucial part in societies' negotiations of the future they envision for themselves, and the shape and place that the technology should take therein.
Drawing on Jasanoff's (2015) concept of sociotechnical imaginaries, we aim to conceptualise the communicative layer of the social construction of artificial intelligence. Sociotechnical imaginaries are "collectively held, institutionally stabilized, and publicly performed visions of desirable futures [or of resistance against the undesirable], animated by shared understandings of forms of social life and social order attainable through, and supportive of, advances in science and technology" (p.4). Focusing particularly on the public communication in this process, we propose the concept of "public imaginaries" of AI, laying out the central aspects of the communicative construction of this complex, inconsistently defined, and highly debated technology. We outline several central dimensions of public imaginaries of AI, including their proponents, their definition of the object itself (AI), their vision for the object (AI) in the future society, and their evaluation of this vision.
We illustrate this conceptual proposal with data on public communication about AI. Using data from the social media platform Twitter between 2019 and 2021, we show that several distinct imaginaries of AI exist, which are sponsored by diverse communities and envision different societal futures.

831 ARTIFICIALITY IN AI CONTROVERSIES

Anders Munk (Aalborg University)

Artificial intelligence, in its many incarnations, has long been the subject of intense public debate. In this paper, I examine and discuss the varying ways in (and degrees to) which such controversies can themselves be said to be artificial. It is an established and long developed notion in controversy analysis in STS that sociotechnical debates, as opposed to mere political disagreements, are particularly substantive in nature; that their qualities makes them particularly important for democracy, offers a particularly good vantage point for observing science and society in the making, and that they are, therefore, also particularly worthwhile studying. Historically, however, the specter of artificial intelligence has been haunting public imagination long before concrete implementations of machine learning and algorithmic decision making became matters of concern - actual issues, with actual 'stuff' at stake. Although this problem of artificiality is not exclusive to debates about AI, it is arguably still an area where questions are frequently raised and agendas pursued without any sociotechnical inquiry taking place in any

situated form. In a cross-media analysis of Danish and international AI debates spanning the past decade, I identify examples of artificiality in AI controversies, propose a framework for categorizing them, and discuss their import for both controversy analysis and democratic engagements with AI in society.

948 THE MOST IMPORTANT AND POSSIBLY OVERLOOKED: CRITICAL EXERCISES IN AI CONTROVERSY DETECTION

Noortje Marres (University of Warwick) Chiara Poletti (University of Warwick) Michael Castelle (University of Warwick)

The 'revolutionary' capabilities of contemporary AI have become the object of numerous interconnected controversies, including about the nature and significance of AI's controversiality itself. For some, today's AI is inherently controversial, as new paradigms grounded in neural networks disrupt established ways of knowing and have been shown to cause real and significant societal harm. Others persist in pursuing a more cautious interpretation, approaching AI as an instance of "promissory science" (Brown et al, 2012): here, the legitimacy (and fundability) of science and innovation becomes directly tied to the scale of their prospective societal impact. In this paper, we report on an empirical study under development, in which we investigate what distinctive modes of problematisation are detectable in AI as an area of controversy (Roberge & Castelle, 2021). To this end, we invited members of diverse AI research communities in the UK to identify what are the most important, and possibly overlooked, disputes, concerns and problematics in AI as a strategic area of knowledge and innovation in the last 10 years. Building on the insights of extended peer communities in the UK (Funtowicz and Ravetz, 1993), we use digital methods of controversy mapping (Venturini and Munk, 2022) to profile the issue areas they identified in online media environments. In this paper, we will reflect on our methodology for analysing the controversiality of AI: it is provocative (and not only observational), as we use methods of elicitation to surface what is and might be controversial about AI; and it is critical (and not only descriptive), as the aim is to identify not controversies but areas of controversiality, which may or may not coincide with unfolding disputes, and which the latter may either indicate or hide.

787 MANUFACTURING HYPE: AI REPRESENTATIONS IN CANADIAN MEDIA

Dandurand Guillaume (Institut national de la recherche scientifique) Roberge Jonathan (Institut national de la recherche scientifique) Blottière Marek (Institut de la recherche scientifique) Gertler Nick (Concordia University) Wester Meaghan (Concordia University)

In Canada, legacy media have represented AI as a 'disruptive' technology—a promising range of techniques that are expected to radically transform society—, but outlets have done so often without rendering AI's technicities and socialities intelligible to a non-specialized public. Building on 14 semi-structured interviews with French and English speaking journalists and a computational analysis of a decade of AI news coverage in Canada, this paper focuses on how Canadian media has shaped controversies about AI according to an analytics of justification. Located at the intersection of the sociologies of expectation and translation, this paper critically analyzes how journalist practices and media processes have manufactured consensus about AI in an effort to present it as the inexorable technoscientific future. First, we argue that the Canadian media ecosystem has predominently represented AI as an inevitable and promissory technology. In Canada, normative practices of what constitutes 'good' tech reporting as well as power dynamics within newsmaking processes (e.g. media conglomerate ownership, political affiliations, news cycle) have all contributed to uncritically shape AI as a profitable and ethically-sound economic project. Second, within this context, journalists have had to vulgarize the technical and political entanglements of AI into popular narratives readily consumable by the public, lending credence to the diffusion of widely accepted narratives about automation and ethical technology. Finally, Canadian journalists tend to write about/on the same celebrated experts (e.g. Joshua Bengio and George Hinton), which contributed to (a) (re)produce a political economy of AI that advantageously benefits these aforementioned experts and their organizations; and (b) obfuscate the role of the State in the rearrangement of the technological governance about AI.

392 NINE WICKED(ISH) PROBLEMS OF REGULATING AUTONOMOUS SYSTEMS

Peter Winter (University of Bristol) John Downer (University of Bristol)

Recent years have seen the rapid development of new autonomous systems in a range of spheres, from medical to automotive. This trend — driven, in large part, by the 'deep-learning' revolution in Artificial Intelligence (AI) — raises complex regulatory questions (Cummings and Britton, 2020). Among these questions, we argue, are several that give rise to what Rittel and Webber (1973) refer to as 'wicked problems': dilemmas with no definitive formulation or optimal solution. Drawing on a document analysis of regulation and research documents across 7 different domains (aerospace; automotive; defence; healthcare; manufacturing; maritime, and rail), we argue that there are nine types of wicked(ish) problems regulators and stakeholders may face in regulating autonomous systems: (1) The 'Borders of Autonomy' problem, (2) The 'Last Mile' problem, (3) The 'Sufficient Safety' problem,

(4) The ‘Public Interaction’ problem, (5) The ‘Black Box’ problem, (6) The ‘Relevance and Representativeness’ problem, (7) The ‘Evolving Functionality’ problem, (8) The ‘Liability and Blame’ problem, (9) The ‘Perverse Consequences’ problem. To differing extents — and for reasons that often, although not always, pertain to the nature of deep-learning — each of these problems poses questions to which there can be no perfect engineering answer. As such, each require regulators (and, by proxy, society at large) to make consequential qualitative judgements about the governance of autonomous systems. This paper not only contributes to an STS critique of autonomous systems and the problems that give rise to them but aims to structure and inform the discourse through which regulators, and scholars of regulation, might begin to navigate them.

Room N116 - Panel 067. TECHNOSCIENTIFIC POLITICAL FUTURES TROUGH THE LENSES OF CLASSICAL STUDIES

Ignacio Marcio Cid (University of Barcelona)
Mosè Cometta (University of Turin)

Classical studies are not pourposeless nor a mere exercise of cultural archeology. While the effects of new technologies are increasingly visible in contemporary society, a serious and in-depth analysis of their political influences is increasingly necessary to understand the direction in which our society is moving. The new challenges posed by technology require new, original and interdisciplinary perspectives of analysis. This panel proposes to address this issue by starting with a reading of the classics. The techno-scientific apparatus is a modern creation, but moderns themselves have repeatedly claimed to be on the shoulders of ancient giants. With this panel we propose a lateral and heterodox approach to the challenging political problems posed by technology. Our departing point assumes that taking into consideration past phenomena and the way those were responded by philosophy and literature can shed light on the nooks and crannies of politics and technology. Reread in open and plural manners, classics can become a useful tool for understanding our future in these regards.

Is it possible to use Plato's reading of citizen education to discuss social media? Can the Stoic paradigm be mobilized to create a legislative framework to protect against the invasion of privacy? Can the hedonist vision enrich the debate on biotechnology? Can we still think about the Trojan horse as a poisoned thanksgiving device, which was indeed a subtle political trap, in order to envision the future of a cyborg, monetized and oppressed human being? Can Athenian democracy be paralleled with the restricted access to information and power in the Web? These are some possible examples of questions we would like to discuss during the session.

This panel welcomes perspectives that combine, in an original and, if possible, interdisciplinary way, classical studies and analyses of the socio-political effects of new technologies. In this sense, we are happy to host presentations of research projects as well as working hypotheses and analysis approaches that are not yet fully completed. The aim of the session is not only to communicate results that have already been achieved, but also to stimulate the reflection and imagination of researchers and thus be the starting point for future projects.

Session 1

163 THE PRESENT IS A KNIFE'S EDGE – ST AUGUSTINE'S PHILOSOPHICAL PRESENTISM AND THE POLITICS OF EXPECTATION

Tobias Olofsson (Lund University)

The ways in which expectations for the future shape how actors and organizations make sense of the present has received growing interest and attention among science and technology scholars – with particular attention being paid to the role of expectations and prediction making in technology and finance. Nevertheless, while the imaginaries involved in the futures described by tech-entrepreneurs and financial market actors are new, their promissory work has ancient precursors; and so does the scholarly enterprise of studying how futures are made to matter in the present.
This paper highlights the relevance of the philosophical presentism of 5th century philosopher and theologian Saint Augustine of Hippo for present day science and technology studies of the future as a socio-technical entity. Drawing on examples from three empirical studies into the production and use of predictions in mineral exploration, literary publishing, and pandemic management the paper explores how the future's non-existence – a central tenet of presentism – play into the politics of the present and how actors and organizations use projections of possible futures to make sense of and shape the room for action in the present.

379 BACK TO (FOR) THE FUTURE: ROMAN PHILOSOPHY, STS AND AI "

Talya Deibel (Bilkent University, law faculty) Eric Deibel (Bilkent university, engineering faculty)

In recent decades STS has engaged ever more extensively with the field of law. Well known examples include intellectual property, constitutional law and human rights. These have an immediate relevance when considering new fields of emerging sciences, various types of genetics, AI and so on. This paper, however, takes as its perspective a deeper understanding of the foundations of law in antiquity. In this sense Roman law should not be understood as an origin story, foundationalism, but rather as the ultimate sci-fi of its era. It was the technoscience of the era. Furthermore it can be applied directly, as a unique vantage point, to the new challenges are posed through the anthropomorphization of machines, blurring the lines between 'humans' and 'things', opening a plethora of metaphysical and ontological discussions.
The paper seeks to rethink STS's relation to law, particularly legal concepts such as personhood, agency, subjectivity, or responsibility. This requires an inter-disciplinary analysis of STS, Roman history and legal or political philosophy. AI is particularly suited as a topic because Roman law had no qualms about hybridizing

'persons' and 'things' or 'subjects' and 'objects'. Therefore, much of the critical thinking about the consciousness of machines (and posthumanity) appear as fully within the confines of Roman legal philosophy. The latter not only operates as the past, as the history of ideas, but is increasingly re-discovered and extended to today's relations between AI and law. What happens when personhood and subjectivity are assigned to artificial agents? What if the AI is fully integrated into human agency? Roman law can answer these questions, but does so in a manner that raises a wide range of moral and ethical concerns, about masters and slaves, about exploitation and about what a meaningful relation to humanness should be.

249 IF PROMETHEUS WERE A SCHOLAR... UNDERSTANDING TODAY'S STS PRACTICES WHILE REREADING YESTERDAY'S ANCIENT MYTHS

Moawad Lise, Humboldt-Universität zu Berlin - Robert K. Merton Center for Science Studies (RMZ)

Since Antiquity, the story of Prometheus, the thief of fire, has undergone multiple rewritings and interpretations (Kahn 1970). This polysemous myth (Vernant 1974) par excellence sometimes highlights a disobedient figure in Hesiod, sometimes a providential hero who steals from the gods to give knowledge and technology to mankind as in Aeschylus. Others, like Protagoras in the eponymous Platonic dialogue, identify him with the intellectual who communicates to men notions of politics, or even philosophy in Theophrastus. This fiction, both an accomplice of didactic poetry in its form (Detienne 1981) and a tool of ideology in its content (Barthes 1957), is thus entrusted with the power to generate the fundamental notions of science (Durkheim 1910; Cassirer 1924). Yet, the above issues are still found in current STS narratives, but simply in a different vocabulary: popularisation of science (Bensaude-Vincent 2010), knowledge transfer (Argote & Ingram 2000), open science (Fecher & Friesike 2014), citizen science (Irwin 1995), excellence (Flink & Peter 2018), societal impact (Bornmann 2013)... Based on classical reception studies (Martindale 1993; Tatum 2014), this proposal intends to understand the operative questions an ancient fictional story asks on our everyday discourses and practices as STS scholars. It first will be recalled how successive scientific revolutions have given rise to the representation of a heroic and beneficent Prometheus (Ginzburg 1976; Hadot 2004). I will then attempt to build bridges between past and present narratives by drawing up a typology of concepts in vogue in STS and linking them to some aspects of the Promethean myth. Finally, the debate will be opened on how we can distance or even slow down the conceptual inflation of today's 'professional centers of truth' (Veyne 1983) in the STS world.

937 HERMENEUTIC STS AND HISTORICAL COMPARISONS

Christopher Coenen (Karlsruhe Institute of Technology)

Recent trends in the field of technology assessment (TA), and more generally in science and technology studies concerned with technoscientific futures, can be described as a hermeneutic turn (for an early plea, see Grunwald, 2014; DOI: 10.1080/23299460.2014.968437). At a fundamental level, this means that a broader range of academic disciplines (especially from the humanities) and the arts play, or should play, a more important role in the analysis of and discourse about science, technology, our contemporary societies and their future(s). Fields such as archaeology, history, literature (e.g. science fiction and utopian) and religious studies and even theology are therefore increasingly seen as essential to such future-oriented studies of science and technology. In this talk, I will continue some earlier reflections on the usefulness of historical comparisons in STS and TA and focus on a comparison of our time with the Roman Empire from the Crisis of the Third Century onwards, taking into account currently popular narratives about this time that address, for example, technological change, migration, (popular) philosophy and religion. I will also offer for discussion some thoughts on the limits of such comparisons and thus on such openness and plurality in discourse on sociotechnical imaginaries.

Room N102 - Panel 074. URBAN SPECULATIONS

Ilia Antenucci (Leuphana University of Lüneburg, Germany)
Armin Beverungen (Leuphana University of Lüneburg, Germany)
Paula Bialski (University of St. Gallen, Switzerland)
Andrea Pollio (Polytechnic of Turin, Italy / University of Cape Town, South Africa)

Computational environments make speculation an ordinary component of urban life. Autonomous vehicles speculate on mobility patterns in the data analysis of forms of sociality on and off the street. Algorithmic urban platforms influence social, economic, and political interactions, establishing boundaries and divisions in urban space via homophilic logics. Patents speculate on the automated futures of a logistical city populated with delivery robots and drones. In these and other ways, speculation – the technological, financial, legal, and social capacity to act in the present against a set of future possibilities – becomes both ubiquitous and mundane. Through test-beds and experiments, technology – married to financial speculations such as those of venture capital invested in platform companies – is deployed to speculate on cultural and social life in the city, and in this way puts in a claim for cities' technoscientific futures.

At the same time, the social, cultural, and political implications of what it means that 'the city' has in many ways become the basis for speculation remain to be enumerated – particularly with regards to notions such as prediction, resilience, or preemption, which structure much of the debate around techno-urban developments and operationalize the logics of platform urbanism. Besides an applied focus of urban informatics or smart cities, science and technology studies, media studies, and urban studies must grapple with the "speculative ordinaries" of the ways cities are remade. To do so requires both methodological adjustments – such as media histories of urban technologies, ethnographies of infrastructures, but also digital methods of data exploitation – and conceptual developments concerning the speculative imaginaries of testing, patenting, and investing.

The aim of this panel is to gather situated perspectives on urban speculation(s) from both conceptual and empirical approaches. We particularly welcome abstracts that explore the gendered, racialised, and postcolonial dimensions of speculative processes. More specific themes that we seek to address in the panel include, but are not limited to: Which narratives dominate the (speculative) future-making of urbanism through technologies? Who are the agents acting - and in whose interest - to make, predict, influence, and shape urban technological futures? How are these agents materialized, embodied, and performed, and what exclusions are maintained? What possibilities of city making do counter-speculations or anti-predictions, in everyday practice and elsewhere, offer?

Session 1

44 INVISIBLE SMART CITIES: READING CALVINO THROUGH ALGORITHMIC EYES

Regev Nathansohn (Sapir College)

This essay offers a reading of Italo Calvino's Invisible Cities (1974) as a potential inspiration and warning for smart city stakeholders who, in the last 10-15 years, have promoted computational models of urbanism through the integration of digitization and artificial intelligence in cities around the globe. Such digitization is heavily based on datafication of urban life: from human interactions, to infrastructure and human-infrastructure interactions. Such datafication is similar to the way Calvino describes Marco Polo's re-presentation of the cities he visited. However, while smart city datafication is mostly based on visible information, Polo's descriptions show the hidden logic of social life in cities, their surprising mechanisms, and their unintended consequences. Regardless of these differences, both kinds of data/representations are produced both to fulfill the desire to know and to predict, as well as to assist in governing populations and managing infrastructures. This paper shows how Polo's descriptions can be read both as reflections of the ways actual smart city stakeholders look at cities and as examples of how stakeholders should look at cities. This paper argues that Calvino's Invisible Cities – with its intellectual, methodological, and imaginative tools – should be read as an elementary guidebook and warning sign for smart city stakeholders and critics.

Calvino, Italo. 1974. Invisible Cities. Translated by William Weaver. Orlando, Florida: Harcourt Brace & Company.

1012 DECODING INFRASTRUCTURE SPACES. LOGISTICS SITES AND NEW URBANITIES

Leonardo Ramondetti (Politecnico di Torino - DIST (Department of Regional and Urban Studies and Planning) – China Room research group) Agostino Strina (Ph.D. Candidate, Politecnico di Torino - DIST (Department of Regional and Urban Studies and Planning) – FULL (Future Urban Legacy Lab)

Over the last two decades, the diffusion of new infrastructure and logistics has caught the attention of a large number of scholars and experts in the field of urban studies and design. The emerging technologies associated with these networks, not only reveal hidden aspects of everyday urban practices, but also provide new instruments for speculating on urban life. By converting landscapes into datascape, they operate a speculative translation of

concrete and tangible urban agents (objects, humans, animals, vegetation and so on) into flows of information. This codification process generates variables that are processed in standards and indicators via analyses techniques such as space-syntax, space-matrix, and uses-indexes. On this basis, planning agencies and architectural offices elaborate computational models for future developments. Most of these projects, for instance the ones by EcoLogic Studio, CRA, and Future City Lab, follow the rules of logistics: improving performativity, reducing energy consumption, optimizing the movements of people and goods, and rationalizing spaces. These visions are then diffused in magazines, and displayed in great exhibitions that speculate on high-tech infrastructure as a means for modernizing rebirth (a perfect example is the 2019 Biennale of Urbanism\Architecture in Shenzhen).
This contribution discusses how the speculations based on new infrastructure are impacting on specific settings, in turn, redefining the way in which the city is envisioned and designed. Particularly, it focuses on two types of spaces: contemporary logistics sites and new infrastructure-lead urbanites. The first reveal the most radical changes made by new technologies in redefining working spaces, the second show how these changes are transforming the city as well. This investigation highlights the need to decode infrastructure spaces through detailed descriptions in order to understand their variety and complexity, and the need to further investigate how infrastructural imaginaries are shaping new urban spaces and vice versa.

815 A RELATIONAL CRITIQUE OF AUTONOMOUS SYSTEMS

Luke Moffat (Lancaster University) Maria Alejandra Luján Escalante (University of the Arts London)

Autonomous and/or Intelligent Systems (A/IS) are often conceptualised according to a model of autonomy characterised by freedom from interference, also called negative autonomy. What makes a system autonomous, according to this model, is the feature of independently giving a rule to oneself.
Feminist critiques of autonomy, in particular, theories of relational autonomy, challenge this negative model by drawing attention to the necessity of interdependence, connection, and entanglement for someone – or something – to be considered autonomous. Dominant modes of assessing the autonomy of a system rely on what Benhabib calls the 'illusion of a disembedded and disembodied self', carried over from a largely Kantian model of autonomy. The reality, however, of how A/IS operate in the world, is increasingly relational. The "westernizing dream" of an autonomous drone that needs no interference from human beings is neither likely nor desirable. With that in mind, this paper explores how relational theories of autonomy help to speculate other futures for A/IS. It views A/IS not as discrete isolated individuals governed by negative liberty, but as interdependent, entangled constellations.
Considering A/IS otherwise, not as self-prescribing, isolated nodes, but as vast constellations of material, philosophical and political realities, has far reaching consequences for an individualist ethics that holds only single discrete individuals accountable. How would the design, implementation and governance of A/IS be affected by relational approaches, and in what ways can that impact a rethinking of urban spaces that is necessary to accommodate their proliferation?
We draw upon transdisciplinary collaborations in the Trustworthy Autonomous Systems for Security project, and isITethical? Exchange, in which we have been working with a creative methodology inspired by Design Justice, to make the case for Relational A/IS, whereby even a single device is always-already embroiled in a planetary network of imaginaries, materialities, policies, and labour.

720 THE DATAFIED CITY: A SOCIO-TECHNICAL INQUIRY INTO DIGITAL TWINS FOR URBAN GOVERNANCE

Macq Hadrien (Technical University Munich)

Digital technologies have pervasive on the way cities are governed. One of the latest iteration of urban governance innovation is the development and use of a 'Digital Twin' – a dynamic virtual re-creation of a city. Digital twins are designed and used for digitally visualizing and interacting with the city, for example to develop future scenarios and test them virtually before implementing them in the 'real world'. They are therefore considered as key to better predict and act upon cities' futures. As such, they are the most illustrative recent example of the emergence of virtual modes of experimenting in urban governance. While previous forms of 'in situ' experiments have been already analyzed in the literature, much is still to be discovered about emerging virtual experiments and their effects on urban governance. This presentation introduces an early-stage research project that aims at developing a socio-technical approach to virtual experimentation by using digital twins as an empirical entry point to the study to the mutual shaping of data-based technologies and the broader contexts in which they are developed and used for urban governance purposes. Based on exploratory fieldwork made of documents and interviews analysis on an ongoing project of digital twin in Liège, Belgium, this presentation more specifically looks at how the city is represented through its digital twin, by whom, and for what purpose. It shows a digital twin developed as part of a public-private partnership, and expected to help fostering economic (re-)development. This presentation therefore allows for critical scrutiny of how speculations on cities' futures are shaped by narratives of optimization, control and economic growth. By doing so, it provides a first step in understanding how virtual experiments are both configured for and used in urban governance.

341 URBAN DIGITAL INFRASTRUCTURING AND THE (RE)PRODUCTION OF PRIVILEGE

Fenna Imara Hoefsloot *On behalf of the UDI writers collective (University of Twente) Ana Maria Bustamante Duarte (University of Twente) Javier Martinez (University of Twente) Fran Meissner (University of Twente) Karin Pfeffer (University of Twente)

Critical approaches to digital infrastructural urbanism have extensively commented on the links between digital transformations and cities as locales of increasing inequalities and exclusion. There are evident tensions between opportunities and threats of ongoing urban (digital) infrastructuring, particularly concerning inclusive and sustainable city making and digital urban citizenship. A focus on those in the most marginal positions is a necessary one. In this chapter, we want to ask what happens if we turn our focus on its head
and seek to understand processes of privilegisation that go hand in hand with an ever-growing importance of urban (digital) infrastructures. By interrogating the term privilegisation – provisionally defined as: the act of 'hard-wiring' access to power to specific sub-groups in the population - we want to highlight
and understand the asymmetry between processes of marginalisation and privilegisation. Both are intimately interlinked in complex processes of urban infrastructuring. The chapter draws on our previous research
in various global urban contexts and five conversations with activists and actors involved in digital urban infrastructuring and how they understand privilegisation. We build on key literature about activist and urban citizenship, urban (digital) infrastructures and social justice to ask: how can an inclusive city be possible if urban digital infrastructures are (re)producing urban privilege?

264 AMAZON'S URBAN SPECULATIONS

Ilia Antenucci (Leuphana University of Lüneburg, Germany) Armin Beverungen (Leuphana University of Lüneburg, Germany) Maja-Lee Voigt (Leuphana University of Lüneburg)

From screens to city streets, Amazon's existing technologies - such as the Echo and Ring devices, their delivery drones and robots, as well as those technologies currently only patented - point to a plethora of speculations on logistical urbanity. As Amazon enlists the city as a testbed for experiments in automation, it speculates on specific configurations of urban life that can be monetised and boost the platform's operations. Also, Amazon's technologies are speculative, insofar as they operate via machine-learning algorithms that anticipate and act upon a range of possible futures. Here, we focus in particular on Amazon Sidewalk, a mesh network which potentially brings together Amazon's various infrastructures of logistics: retail and surveillance. We inquire into the ways in which these speculative algorithms become normative, as they prefigure / indicate specific logistical subjectivities and modes of governance. How does Sidewalk reconfigure the situated spaces of commerce, at home and beyond? What kinds of subjectivities – relating to safety and surveillance, consumption and commerce – do they anticipate and promote? Which kinds of collective decision-making processes do they preclude? What modes of governance – in terms of behavior modulation and biopolitics – do their data economies and algorithmic analytics enable? Finally, we engage in speculative research to explore potential responses to these modes of governance and types of subjectivity. What kinds of counter-speculations / practices emerge, for example in the tech worker and other (anti-Amazon) movements?

Room N117 - Panel 077 FROM ACCELERATION TO TARDINESS. QUALITATIVE TEMPORALITIES IN THE TAMING OF VISIONS IN INNOVATION PROCESSES

Ulrich Ufer (Karlsruhe Institute of Technology, Institute for Technology Assessment and Systems Analysis)
Alexandra Hausstein (Institute for Technology, Institute for Technology Futures, Hausstein)
Andreas Lösch (Karlsruhe Institute of Technology, Institute for Technology Assessment and Systems Analysis)

Modern innovation discourses are framed by promises and expectations of pioneering techno-scientific renewal and groundbreaking future improvement. Often, these promises and expectations are based on technoscientific visions of the future. Once activated and socially relevant, these visions can provide resources for generating new meaning and orientation in contexts of impending social and technological innovation. They provide a narrative to temporally frame innovation discourses and structure their practices. Radical visions therefore have the potential to create interfaces between a present that is characterized as stationary, or slowly changing, and a surprising future that has escaped any notion of linear development.

In the process of activating visions in innovation discourses and attempts of putting these into practice, however, they often lose their radicality. This panel is concerned with the role of visions in innovation processes, their changing nature once they go through processes of institutionalization and the process of diffusion of visionary ideas of the future.

Panelists are asked to discuss and elaborate the central hypothesis that speedy realization may be central to notions of radicalness and disruptiveness in visions and in innovation discourses, whereas they often suffer from tardiness, delay, hesitation, deferral, procrastination, or deceleration. The precarious nature of original radicalness and intended disruption tends to fade out the closer it gets to realization, concretization or social diffusion of visions accompanying innovations. What may seem, at a first glance, like a commonplace description of adjustments necessary when moving from (utopian) thinking to practice, points at a deeper level to an interesting constellation: Particularly under the guiding principle of social robustness, sustainability and responsibility, technoscientific visions are often "tamed", but provide orientation, gain transformative capacity the more they are presented as solution-orientated and feasible. Thus, promised disruptive innovations often result in incremental innovation processes.

The panel seeks interdisciplinary thematic and reflexive contributions as well as specific case studies that answer to, elaborate on and add to the following questions and observations:
• What role do radical visions play in the course of innovation processes?
• How do visions change in the course of innovations processes?
• In how far are qualitative dimensions of temporality, such as, on the one hand, speed, acceleration, or pressure, and, on the other hand, tardiness, delay, hesitation, deferral, or deceleration, effects of institutionalizing visions?
• Can the qualitative dimensions of temporality be analyzed as tactical means on the level of institutions, policy makers, stakeholders, or society at large, to dilute and attenuate radicalness and disruption?
• What are concrete examples for the relevance of qualitative temporalities (from acceleration to tardiness) in radical visions and (discourses and narratives about) disruptive innovations?
• How are disruptively staged visions tamed and transformed into social robustness?

Session 1

546 URBAN CHRONOTOPES OF INNOVATION

Ulrich Ufer (Institute for Techology Asessment and Systems Analysis, Karlsruhe Institute of Technology)
Alexandra Hausstein (Institute for Techology Futures, Karlsruhe Institute of Technology)

This paper takes an interest in the changing relations between (symbolic) spaces and temporalities when cities are conceived as hotbeds, laboratories, or catalysts of innovation. That urban space contains designated and secretive representations of past time layers shows, for example, in the notion of the urban palimpsest, which gestures both to material and immaterial representations of pastness. Likewise, urban space contains representations of what is emergent, sprouting, innovative. Innovation narratives usually treat innovation as a disruptive act, or event, thereby emphasizing singularity and momentariness at the neglect of innovation's actually processlike nature. Likewise, single, specific places are getting assigned innovative qualities, for example by urban development and marketing policies. However, this disregards that actual rhizomatic and networked relation of places of innovation. The visionary capacity of meaning creation attaches to the representative places in cities a temporal regime by assigning novelty and innovativeness and by recombining the old with the new. Prospective visioneering as a driving force in the process of innovation plays on the syntagmatic possibilities of the urban chronotopos by way of reassamblage, re-constitution, novel connections, archiving and exclusion, in order to give representation to what lacked representation heretofore. We explore a number of symbolic spaces in innovation discourses and practices and the chronotopic values and meanings assigned to them.

145 HAIL MARY: THE IMPACT OF TIME PRESSURE AND URGENCY ON INNOVATING TOWARDS POSSIBLE NEW WORLDS

Filippo Reale (Goethe-University Frankfurt)

One of the typical, far-reaching temporalities of innovation is time pressure, or "urgency." Finding a Covid-19 vaccine is just the most obvious example, while many other innovation processes happen while time obliterates leeway as it passes. Whereas incremental innovation may very well be urgent, disruptive innovations are much more susceptible to time pressure, and be it for their higher demand for time in terms of legitimation and valuation. Not least, they often serve to tackle a contemporary grand societal challenge which is usually itself urgent. Thus, urgency redefines innovative processes in a variety of ways. Urgency fosters the radicalization of ideas. Policy-makers, entrepreneurs, and other promise-makers may radicalize – or "hype" – their ideas, narratives and promises in order to more quickly build advocacy coalitions and bind stakeholders. This might result in collective boldness as much as it might in stubbornness, with diametral effects on the dynamics of the innovation process at stake. Urgency moreover saves to cut short social conflict. This might lead to rationalizing conflict by ignoring animosities and concentrating on what is there of known facts, as much as it might result in cementing (the returns from) hegemonic positions. Urgency also hinders collective learning, something which might result in a lack of creative and problem-solving capacity as much as it might lead to leaps of faith and using policy windows more virtuously. Through this, in contrast to pertinent perspectives on time as a resource, time gains a special kind of agency in innovation processes after all. The contribution establishes urgency as a condition of collective action, carves out its effects on innovation – with particular respect to disruptive innovation and collective "missions" – and ends with some propositions concerning the conditions under which urgency could add – instead of subtracting – potential to such transformative innovation processes.

510 CRITICAL NARRATIVES AND METRICS AS THE MEANS OF NEGOTIATING RADICAL VISIONS OF SOCIO-TECHNICAL CHANGE: THE CASES OF ELECTRIC MOBILITY TRANSITION IN CALIFORNIA AND POLAND

Aleksandra Lis (Adam Mickiewicz University)

The paper examines transition to electric mobility in two different contexts - Poland and California – with regard to the radical visions of disruptive change in local transportation systems and the incremental change that ensue in practice. Based on qualitative research carried out in both locations in 2021 and 2022 – business and policy document analysis as well as interviews with experts in the field of transportation – the paper engages with different temporalities of the two transition processes. California represents one of the first-movers in climate policies – not only in the USA but also worldwide – and Poland is regarded as the permanent laggard of EU climate policies. California is an EVs' high adoption country and Poland locates itself at the EVs' low adoption end. Despite a great temporal gap in climate action and an economic gap between California and Poland, the transition to electric mobility in both places is marked by radical visions of a disruptive change and a lower pace of the actual process. The analysis points to the role of critical narratives that problematize the pace of transition – as too slow or too fast – as well as metrics that operationalize the actual targets as two means of negotiating temporalities of transition in a given context. The following questions are addressed in this paper: Who are the different actors that propose radical visions of socio-technical change? What kinds of critical narratives and metrics are proposed in each context to negotiate the local pace of transition? What actors articulate these narratives and metrics? What similarities and differences in terms of the locally negotiated temporalities can be found in California and in Poland?

926 PUSHING PREVENTION IN TIMES OF CRISIS

Els Roding (London School of Hygiene and Tropical Medicine)

Pressure ulcers (PUs) are injuries caused by continuous pressure on skin. Recent campaigns in the United Kingdom's NHS (National Health Service) have emphasised their avoidability. The medical device industry has developed products for PU prevention, such as scanners, dressings, and mattresses, designed to monitor or interrupt the linear progression of PU development. This paper ethnographically explores how the industry uses and co-produces the idea that most PUs are avoidable, thereby pushing the boundaries of the category of preventable PUs to expand the category. In doing so, it examines what this shows us about prevention as a unique future orientation.

Room N115 - Panel 085 UNSEEN PARTICIPATION? WHEN THE UNINVITED SHAPE MATTERS OF COLLECTIVE CONCERN

Olga Zvonareva (Maastricht University)
Claudia Egher (Maastricht University)
Artur Holavin (Maastricht University)

Ways of taking part in formulating and addressing matters of shared concern are diverse. Practices people employ to engage in shaping societal orders go far beyond organized formats such as citizen juries or co-production sessions, where questions and tasks are, to a large extent, preset. Particularly creative practices emerge in situations when participation is not invited, but is discouraged, met with hostility, or not even recognized as such. Such situations are not exceptional because even in established democracies pockets of exclusion exist.

Practices of participation under adverse circumstances deserve more attention. Besides known and highly visible protest movements, there are also mundane and non-heroic practices that, nonetheless, feed into maintaining, transforming, or disrupting governance arrangements. An example in this sense are the activities of people diagnosed with life-threatening conditions but with limited access to medications, who come together in concealed ways to re-distribute the medicines and financial resources they can muster to ensure continuity of treatment in contexts where state authorities heavily neglect and stigmatize them. But one can also think of the various ad-hoc practices which locals undertake to render certain urban spaces more inhabitable, and which are often discarded by authoritative groups as acts of vandalism. Such everyday practices are generally not recognized as participation because of an established analytical focus on more dialogical and explicit participatory formats. Furthermore, participation under adverse circumstances may involve working around formal procedures and public spaces and depend on remaining hidden. Yet, since public participation tends to be conceptualized as dependent on making issues visible and debatable, these hidden practices often escape scrutiny.

We invite papers that consider how, in situations of hostility to participation, participation is still made possible and with which consequences. In line with the call to turn to 'alternative knowledges and visions, emerging modes of resistance and unseen strategies of world-making at the margins', we would like to critically examine diverse forms of participation, often unrecognized as such, either as a result of particular power effects, or because their effectiveness is predicated on their covert character. This undertaking makes noticeable the arrangements and imaginaries brought into our common world via these different types of unseen and marginalized participatory practices, and invites reflections on the current and future political consequences of such practices.

Session 1

951 ANALYZING BOTTOM UP CITIZEN PROTEST AGAINST BIODIGESTERS FROM A CITIZENSHIP PERSPECTIVE

Lotte Krabbenborg (Radboud University, Institute for Science in Society) Kyra Ruiten (Institute for Science in Society, Radboud University)

In this paper we will analyze bottom up citizen protests against the installation of biodigesters from a citizenship perspective (Isin 2009, 2017). Biodigesters produce biogas by heating organic livestock waste in a controlled environment. While proponents (e.g. farmers, policy makers) emphasize its potential for renewable energy production, and the reduction of manure surplus, others, like local inhabitants, articulate concerns with regard to e.g. safety, and sustainability. As such, biodigesters can be seen as a matter of common concern: different groups of actors have an interest in the development of the biodigester, but in fundamentally different ways, leading to public controversy. Ideally, from a political philosophical perspective (e.g. Arendt 1968) and RRI perspective (e.g. Stilgoe et al 2013), citizens have a 'right' in this respect to speak up in these spatial issues, inform themselves and engage in ongoing debates and negotiations with other stakeholders. Our research shows the complexities that arise when citizens are willing to do so by following, retrospectively and real-time two citizen groups resisting the arrival of biodigesters in their hometowns, the Eastern part of The Netherlands. While there was almost no space in formal decision-making processes for citizens to engage, we show via document analysis, multi-stakeholder interviews(N-=16) and on-site observations, how the two citizen groups tried to break down these already defined governance practices (Isin 2009) and became an 'uninvited' actor on the scene (e.g. Wehling 2012). Moreover, we will show that citizens' claims and strategies were met with hostile reactions from e.g. farmers and policy makers, which turned the 'political' into personal attacks. To conclude, we will discuss whether and how citizenship literature on e.g. the constitutive role of a public sphere in society, right to be informed, can enrich STS approaches to study (uninvited) public engagement in decision making processes.

81 PATTERNS OF (IN)VISIBLE PARTICIPATION: CASE OF PATIENT ORGANIZATIONS IN RUSSIA

Olga Temina (Maastricht University)

Successes of patient movements in the “west” has long been connected to their practices aimed at increasing visibility of patients’ problems and suffering (e.g. Rabeharisoa et al., 2014). Through visibility these patient organizations legitimize their causes and participation in political and biomedical decision making. This is made possible in the context of well-established mechanisms of civil participation. Yet, patient participation in other contexts seems to be following different logics.
In my presentation I will discuss insights from my ethnographic study focused on patient organizations that are concerned with oncological and rare diseases in Russia. I will focus on the routinized practices in which these patients engage, individually and collectively, in order to construct access to medicines. Through attention to these mundane and usually informal practices I will tell a story about human agency, resilience, and resistance in the context of infrastructural hostility. I will look into how this form of participation, although usually not recognized as such, turns into legitimation tool for making claims and demanding action.
I will also focus on visible patient organizations’ practices of political participation where (political) meanings of bio-medical issues are negotiated. I will demonstrate how this intentional politization or depolitization of the biomedical becomes focal in communication with the state, how it defines the participation opportunities for patient organizations, and what peculiar pattern of visible and invisible emerges.

153 PRODUCING “PURE SCIENCE”: UNINVITED LAY EXPERTS SHAPING REFUSED KNOWLEDGE ABOUT VACCINATION IN ITALY

Barbara Morsello (University of Padova) Federico Neresini (University of Padova)

The paper aims to address how lay experts produce alternative knowledge, mostly ignored by official science and refuted by public health institution, to reinforce what they consider the “pure science”. Studies on ignorance (Gross, McGoey 2015) often argued that public ignorance of science prevents citizens from making rational decisions about scientifically supported policies as in the case of vaccine hesitancy (Goldenberg 2021). However, this groups of lays, such as antivaxxers, claim of a positivist idea of authentic and disinterested scientific knowledge (Harambam & Aupers, 2015) shaping matter of public concern.
These groups, in fact, do not reject science, but shows an ultra-positivistic (Yl-Anttila's 2018) and idealized idea of science framed with the label "pure science". In this line, the objective is 1) unboxing "pure science" and 2) showing how antivaxxers contest epistemic authority of what they perceived as "impure science". Therefore, we present the strategies through which these groups want to undermine the authority of scientific knowledge about vaccination. We will then present two exemplary studies carried out respectively by two major Italian associations for free choice vaccination in Italy: Comilva and Corvelva. The first is a metagenomic study, carried out by Corvelva, to demonstrate the harmfulness of Priorix-Tetra vaccines used in children from 11 months to 12 years, for the prevention of diseases caused by the viruses of measles, mumps, rubella and chickenpox. This study has gained the attention of the public opinion and health institutions in Italy, being mentioned also by international journals such as Nature. A second research project, implemented by Comilva, aims to investigate the effectiveness of vaccine protocols and natural immunization. This project, still in progress, is requesting the participation of citizens who freely undergo antibody tests, giving up the privacy protection of their health data to support the cause of antivax associations.

114 FROM ILLEGAL TO ESSENTIAL PARTICIPATION: THE CASE OF ETHICAL HACKING

Anne Marte Gardenier (Eindhoven University of Technology)

The digitization of society comes along with cyber threats such as ransomware, phishing, and espionage. This renders states, businesses, and citizens vulnerable. Yet, cyber security is often not high on the agenda.
In this light, the work of ethical hackers has been of high importance. Ethical hackers voluntarily make the internet safer, but usually must do their work in the dark. They check systems for vulnerabilities and disclose them to the responsible system owner, but are often met with hostility because such checks are considered as illegal break-ins. For a long time, ethical hackers have been subject to criminal investigations and prosecutions. In the last years, however, the work of ethical hackers is increasingly acknowledged within cybersecurity governance arrangements. Businesses around the world now reward vulnerability disclosures under the name of 'bug bounties'. In the Netherlands, guidelines for "coordinated vulnerability disclosure" have been established which protect ethical hackers from prosecution. From 2022 onwards, a Dutch ethical hacker institute run by volunteers will receive government funding. This means that the importance of the work of ethical hackers is officially recognized and that they will expand their role in cybersecurity governance.
In this case, actions by volunteers motivated by civic virtue had long remained in the shadows because it was regarded as illegal and vandalistic. Yet, the persistence of the hackers in combination with an increased awareness for the disruptive force of cyber-attacks has turned ethical hacking into a recognized essential form of participation in cybersecurity governance. This is an example where unrecognized participation became accepted and rewarded. By investigating how this shift in power relations between cyber security actors came about, this case can fruitfully contribute to the framework of unseen participation.

Thursday 7th July

11:00-12:30

Room N109 - Panel 004 THE FUTURES IN AND OF GENOMICS

Violeta Argudo-Portal (Institute of Public Goods and Policies, Spanish National Research Council (CSIC)
Mauro Turrini (Institute of Public Goods and Policies, Spanish National Research Council (CSIC)

The dramatic fall in the price and cost of genomics testing has made possible a practice that seemed to be confined to the laboratory until a few years ago. Testing one's DNA, or that of beings close to us is an increasingly widespread and almost trivialised possibility. Particularly in the reproductive sphere, where non-invasive prenatal testing, pre-conception or gamete donor screening are emerging, but also more simply with the use of direct-to-consumer genetic tests that can investigate susceptibility to diseases, food intolerances, allergies, and so on. A common element of these tests is that they use genomics to anticipate the future in different ways: to predict the possibility of a genetic mutation in a couple before conception, to identify the presence of a chromosomal/genetic disorders in a foetus before it to be born, or the predisposition to a common, multi-factorial disease before its onset. The relationship with the future is certainly one of the aspects that makes genomics as much promising as controversial, if not even disturbing. That is why this panel aims to ignite a conversation around the question: what are the futures embedded in genomics?

The possibility of a disease-free future comes along with the threat of discriminating on the basis of DNA and, more generally, with the imperative of knowledge-based management to optimise risk. While healthcare systems are extremely cautious about these tests, whose clinical usefulness they often dispute, their main driving forces are clinics, laboratories, or private companies whose commercial strategies rely on the symbolic power of the genome. In this space, situated on the fringes or outside the national healthcare services or the medical establishment, the access rules to human constitutional DNA are reconfigured and rooted in the very materiality of the technology used. These types of highly routinised testing practices make use of a wide range of devices that, for instance, analyse genomes through panels of pre-set DNA variants or segments in a quasi-automatized way. As these panels incorporate the medical decision of what regions of DNA are worth being analysed, they are the object of debate of international, national, or local ethics committees, and medical associations. Also, like many other classification systems, they tend to crystallize into standards that compete in crafting the future of genomics. For this session, we welcome contributions to explore how these futures embedded in genomics reconfigure practices of consumption and subjectification, discourses and imaginaries of health and well-being, systems of regulation of access to DNA, and the production of testing devices. We are also open to submissions delving into the more-than-human confines, where genetic testing or screening are used on embryos, foetuses, or non-human animals such as companion animals or farm animals.

Session 1

429 AMBIVALENCE IN THE PRACTICE OF ADVANCED GENETIC HEALTHCARE

Janneke M.L. Kuiper (Centre for Sociological Research, KU Leuven) Ine Van Hoyweghen (Centre for Sociological Research, KU Leuven)

The latest developments in the life sciences, such as advanced DNA testing, are often met with ambivalence: people are both fuelled by its promises and fearful of its potential threat to our core human values (Nowotny, 2008). This ambivalence is not only found in societal responses, but also in everyday healthcare practice: evidence-based medicine's strive to objectify, classify and standardise simultaneously produces increased order as well as ambivalence (Nettleton, 2006; Bauman, 1991). Conflicting expectations, interests, and demands in healthcare practice can fuel tension and ambivalence on both an individual and structural level. This article uses the concept of 'ambivalence' as a lens to characterise the tensions found in dealing with the newest DNA sequencing techniques, next-generation sequencing (NGS), in clinical practice. The clinical implementation of NGS, which allows many genes or even the whole exome or genome to be sequenced at once, has heightened the chance of finding a genetic diagnostic answer. However, results are often more complex and uncertain and call for multidisciplinary and multifaceted decision-making (Kuiper et al., 2021). Based on extensive multi-sited qualitative research in two large European human genetics centres, this study aims to make visible the tension, negotiation, and compromise involved in navigating the different modes of 'doing good care' at play in genetic healthcare practice (Pols, 2003). Building on both observational and interview data, we show how research and clinical practice informed interests, demands, and concerns are intertwined in everyday practice and structure. Secondly, we analyse how the experience of ambivalence creates tension in what care is offered and how care is experienced by patients. With the implementation of NGS still gaining speed, providing insight into how practices and structures are shaped by 'the dynamics of ambivalence' (Smelser, 1998) can help to give direction to the future of genetic care more consciously.

1042 ADDRESSING MATTERS OF CARE IN DIVISIVE GENOMIC TESTING PROJECTS : THE CASE OF PRECONCEPTION AND NEWBORN SCREENING IN BELGIUM

Shana Riethof (University of Liège)

In Belgium, noninvasive prenatal testing (NIPT) became the first genomic technology completely covered by health insurance in 2017. Against the backdrop of rapidly evolving sequencing techniques, several pilot testing programmes have emerged across the country, notably in prenatal and neonatal care. Yet not all of these socio-technical innovations meet a straightforward success in their clinical applications. Based on a qualitative methodology, this paper analyses the tentative enactment of a genomic platform project in a hospital of the Walloon region. This paper explores the reasons why two genomic testing devices included in the project only met a partial success (in the case of newborn screening) or faced a solid rejection by the clinical team (in the case of preconception extended carrier screening). What can the failure of one genomic testing device and not the other tell us about the ethical choreography needed to create a 'good science', in Charis Thompson's terms (2013), or at least an 'acceptable' one ? Particularly, how do the different actors involved envision and assess the uses and consequences of genomic testing in their respective practices ? Both technologies pertain to the remaking of the living, whether by averting some kinds of births or by saving some kinds of lives. They can foster shared concerns across different clinical milieus, but their acceptability depends on how the specific goals and means of each therapeutic intervention are re-aligned with the affordances of the technique. Addressing matters of care in highly unstable informational contexts, this paper also highlights the role of pilot programmes in exposing that the very conditions which make genomic testing possible are the ones that put it to the test.

49 SLOWING DOWN DECAY: BIOLOGICAL CLOCKS IN PERSONALIZED MEDICINE

Clémence Pinel (University of Copenhagen) Sara Green (University of Copenhagen) Mette Svendsen (University of Copenhagen)

Drawing on ethnographic fieldwork in data-intensive laboratories, this paper discusses the building of so-called biological clocks in personalized medicine. These consist of ageing biomarkers developed based on various omic data, such as epigenomics or glycomics, to monitor and compare individuals 'true' biological age against their chronological age. We start by analyzing what it takes to build such biological clocks, specifically pointing to the work of data analysts mobilizing different forms of data to assess individuals' bodily ageing. We then explore the sort of futures, subjectivities and imaginaries that are crafted in such practices. Using the concept of decay, we argue that biological clocks represent efforts to monitor individuals' decay, and in particular it looks to identify when decay is 'out of tempo' to then offer personalized solution to slow down decay. In fact, many of these biological clocks are packaged as direct-to-consumer products that come with personalized lifestyle programs to help individuals slow down ageing. Beyond learning about the practical implications of building such biological clocks, this case is particularly revealing of the political vision of personalized medicine, and contemporary genomics more broadly. As biological clocks are made into marketed products measuring individuals' health and wellness, personalized medicine becomes an individualized and biomedicalized endeavor looking to offer tailored solution to slow down or stop decay.

199 DOES THE FUTURE OF GENOMICS LIE BEYOND ITS EXPERIMENTAL SYSTEMS? EPIGENETICS AS CASE IN POINT.

Luca Chiapperino (University of Lausanne, Faculty of Social and Political Sciences, Institute of Social Sciences, STS Lab)

Epigenetics is an archetypal post-genomic science. Its research agenda deals with the effects of material, social and ecological environments of life over the genome. In this respect, it moves past heavily criticised tenets of hard genomic thinking – the idea that we are hard-wired by our genes – and requires a minima to entertain an alternative view of biology. Yet, epigenetics is also a post-genomic science in the sense that it rests upon the material substrates, tools and experimental systems established with the Human Genome Project. Commonly used DNA methylation or histone modification assays are de facto next-generation sequencing (NGS) experiments. Far from only providing post-genomic explanations and ideas, epigenetics is therefore an archetypal post-genomic science in the sense that it heavily relies on the ways of knowing biology typical of the experimental tools of genomics.
In this paper, I draw from interview data (N=35), literature and observations of a five-years fieldwork documenting the production of epigenetic knowledge for uses in public health, biomedical research, as well as in policy-making. I describe how scientists navigate the uncertainties, constraints and tensions of post-genomics; that is, how challenging are their attempts to transform genomic research infrastructures into dynamic, non-gene-centric and environmentally embedded research pipelines. The exigency to entangle large volumes of data, to assemble significantly different aims of research (e.g. mechanistic, predictive, populational), as well as to produce distinct integrations between heterogeneous data (from scores of socio-economic status, to postcodes and functional analyses of gene expression) impends upon scientists succeeding in taking up the challenges of post-genomics. The future of genomics may therefore depend on the enactment of such imperatives towards complexification. Genomics, many have argued, was a victim of its premises and promises. Will post-genomic science succeed to entertain an open, plastic, reactive, environmentally embedded view of biology?

567 FROM INDIVIDUAL TO THE GENOME AND BACK: THE 'GENOMIC IDENTITY' MULTIPLE

Kaya Akyüz (University of Vienna)

Despite an increasingly datafied world, imaginaries and sensibilities from a sociotechnical past are part of our lives. Anonymization and pseudonymization are concepts that we hear (and use) not only as social scientists, but individuals whose data of different types and sources are constantly created, stored, modified, linked, transferred and analyzed. Increasing amount and scope of individual-level data and the expectation of personalization and precision, from medicine to music platforms, make it difficult to sustain past practices and understandings of privacy. While this difficulty is often managed with more advanced technical tools, ethical-legal frameworks or even international politics, genomics and accumulation of genomic data bring a new twist to the current situation. From media attention to forensic genealogy that has been solving many decades-old criminal cases, to controversies in science, such as the publishing of the HeLa cell line's genome sequence, genomics allows re-thinking of what anonymization and identifiability mean in the 21st century. In this paper, I follow multiple episodes from history and developments in data infrastructures to understand the transformations of the link between the genome(s) and the individual(s) that allows us to transcend the individual in exploring shifting understandings of genomic identity. By moving between genomes and individuals, this paper contributes to the postgenomics literature in repositioning the ontological focus from the individual and individual's data to the multiplicity of genomic identity.

Room N106 - Panel 013. SOCIETAL ACCEPTANCE OF NEW AND EMERGING TECHNOLOGIES: CRITICAL ENGAGEMENTS IN ENERGY TRANSITION AND CLIMATE CHANGE MITIGATION

Session 2

568 "WHAT IS CARBON CAPTURE AND STORAGE AND HOW DOES IT WORK?": GOOGLE AND WIKIPEDIA AS MEDIATING INFORMATION INFRASTRUCTURES IN EMERGING CLIMATE TECHNOLOGIES

Jussara Rowland (Institute of Social Sciences, University of Lisbon) Ana Prades (CISOT-CIEMAT) Sergi Lopez (CISOT-CIEMAT) Raquel Bertoldo (Institut Symlog de France) Ataberk Basci (Institut Symlog de France)

In this presentation, we aim to study the way knowledge about an emergent technology - Carbon Capture and Storage (CCS) - is produced and consumed on the internet through two specific digital infrastructures: Google and Wikipedia. These infrastructures are central for knowing in contemporary societies, having become the most used tool to search and access information. They promote specific content, they shape the way information is presented and shared online, they mediate the access to scientific information for the majority of the public. They are also emergent (and interdependent) knowledge technologies. The content they promote is the result of specific processes, resulting in the case of Wikipedia, from global and local participatory collaborative dynamics and, in the case of Google, from raking criteriums based on (not always transparent) commercial and algorithmic logics that tend to prioritize users' needs and location. Their results are also often independent since Google significantly relies on Wikipedia as criteria for search returns. Both platforms, thus, offer an opportunity to study how an issue like carbon capture is socially materially constructed online, but also, to reflect on how the content they present intersect with the material, social and cultural specificities of different countries over time.
Based on a content analysis of data collected online in Portugal, Spain, and France during the first phase of the EU funded project CO2 Geological Pilots in Strategic Territories - PilotSTRATEGY, we problematize the mediating role these digital infrastructures have on shaping knowledge on the risks and benefits of CCS in different national contexts. How is this information a reflection of ongoing debates, investments, and projects? What information is prioritized and promoted by these platforms? Answers to these questions are important to understand the role of internet infrastructures in the construction of the public acceptance of emerging and controversial climate technologies.

879 MEDIA REPRESENTATIONS OF GEOLOGICAL CARBON STORAGE: A COMPARATIVE ANALYSIS OF THREE COUNTRIES

Ana Prades (CISOT - CIEMAT) Ana Delicado (Institute of Social Sciences, University of Lisbon, Portugal) Jussara Rowland (Institute of Social Sciences, University of Lisbon) Sergi Lopez (CISOT - CIEMAT) Marc Poumadère Symlog

Climate change is a global threat that requires a multi-pronged approach, combining effective policies, production and consumption transitions and technological innovations. Without disregarding the need to curb emissions, a wealth of emerging technologies is being discussed as possible solutions for sectors were decarbonisation is difficult, if not impossible. Carbon capture and storage is one of these technologies and the use of geological deposits one of its main dimensions.
Social representations are key elements to assess the degree of public acceptance of emergent technologies, in particular when analysed against a backdrop of contextual factors (socio-economic conditions, policies, risk perceptions, community dynamics, place attachment, etc.). The analysis of news content can be a powerful method to achieve such an understanding, namely by identifying which topics, valuations and constructed views of technology related subjects are presented in the media and to what extent are they important in (in)forming public opinion about it.
This paper will present the main results of a media analysis on representations of geological carbon storage in France, Spain and Portugal, in national and regional newspapers. It is part of the ongoing EU funded project CO2 Geological Pilots in Strategic Territories – PilotSTRATEGY.

455 LITERACY: HOW TO GAUGE AND REWIRE STAKEHOLDER DISCOURSE

Daniel Wuebben (University Rey Juan Carlos)

The concept of “energy literacy” relates to the ability to see how enmeshed energy is with all aspects of our existence and to engage energy-related problems and solutions. My proposed paper focuses on a subfield of energy literacy that I call “grid literacy.” The fundament aspects of grid literacy that might be quantified are 1) knowledge of the various electricity networks (e.g. transmission and distribution) and sources (hydro, coal, wind, etc.) that support the balance of supply and demand in a given grid 2) understanding of how local production and consumption patterns impact and are impacted by broader market forces and 3) acknowledgment of the technoscientific and political forces that undergird the current and future grid systems. Enhancing grid literacy, I argue, is especially important at a moment of ambitious energy transition policies, fluctuating carbon emissions trading systems, global shipping backups, and the threatened closure of international pipelines. A complex tangle of forces has led local energy prices to spike and for many citizens, the bottom line on this month’s energy bills overwhelms the sometimes razor thin lines between evolving international events, the cold bureaucracy of grid management, and the various “clean” energy technologies and programs that spread out from the wires inside their homes. To help expand this narrative, my paper establishes the concept of grid literacy in related to recent scholarly work on public perceptions of renewable energy infrastructures (Watts, 2020; Hughes, 2021). It then sets up two case studies of grid literacy in Spain related to national policies for home solar (or ‘autoconsumo solar’) and the new three-tiered time of use tariffs. Finally, I offer (and seek feedback) about how to further ground the concept grid literacy with empirical research.

209 SOCIETAL ACCEPTANCE THROUGH TECHNOLOGICAL INNOVATION? EXPLORING THE SOCIO-TECHNICAL BOUNDARY CONDITIONS OF SPENT NUCLEAR FUEL PARTITIONING AND TRANSMUTATION

Robbe Geysmans (SCK CEN) Marika Silvikko de Villafranca (SCK CEN)

While in numerous countries nuclear energy has become part of the energy mix, its sustainable character has been the topic of continuous discussion. Often mentioned in this debate is the long-term challenge posed by radioactive wastes, -and particularly spent nuclear fuel-, which need to be isolated and contained for periods up to a million years. Some argue that one way of dealing with this challenge could be partitioning and transmutation (P&T). P&T encompasses the separation of some of the long-lived elements of spent nuclear fuel, and converting them to shorter-lived elements. This process might make waste disposal sites more manageable and more acceptable to the public.
However, P&T has long been in development, and has not yet reached industrial maturity, meaning that the above is an uncertain assumption rather than an established fact. Building on data obtained through interviews with researchers (n=8) working on fields related to P&T, country case studies in France, Japan, India, the UK, the US and Finland, and a workshop with Belgian nuclear stakeholders, this paper explores how the technological innovation of P&T might impact on and respond to broader societal conditions, needs, and challenges. This socio-technical entanglement is explored, with a focus on how P&T might develop in a context which is characterized by past, present and future policies, experiences, artefacts and infrastructures. The paper argues that rather than being a solution to the ‘wicked problem’ of radioactive waste management, P&T is a wicked problem itself, facing important uncertainties on societal implementation and acceptance. In order not to replicate the old nuclear dictum of ‘decide, announce, defend’ which decoupled technological innovation from societal application, it is time that P&T’s ‘back-box-in-the-making’ is opened up for debate and reflection.

1010 TECHNO-SCIENTIFIC PROMISES AND RESIDENTS’ PERCEPTIONS ON SMALL MODULAR REACTORS

Matti Kojo (Tampere University) Markku Lehtonen (Pompeu Fabra University) Tapio Litmanen (University of Jyväskylä) Niina Kiviluoma (University of Jyväskylä)

In recent years, Small Modular Reactors (SMRs) have received increasing attention in Finland, as a potential contribution to climate and energy policy. To curb climate change, energy production must be decarbonised. This requires new technologies, as for example several cities in Finland still depend on coal for their heat supply. SMRs have been presented as one option for district heating in the Helsinki metropolitan area.
The paper focuses on the discursive side of promises and the role of public perceptions in the construction of the techno-scientific promises of SMRs, drawing in particular on an analysis of residents' perceptions concerning SMRs in the Helsinki metropolitan area in Finland. Following Joly and Le Renard (2021), we define techno-scientific promises "as the apparatus by which actors (promise entrepreneurs) interest and enrol different audiences in order to mobilise resources to achieve techno-scientific transformations". By studying news items published in the Finnish media, we explore the arguments put forward by "promise entrepreneurs" and their critics in public debate relating to the SMR technology in Finland. The second research task relates to public perceptions concerning the potential of SMRs, and hence addresses the possible role of public opinion in the construction of promises. To answer the question, we draw upon a resident survey (N=1600) conducted in November 2021 among the Finnish-speaking residents of the Helsinki metropolitan area, aged 18–75 years.
The paper contributes to the existing body of STS research on sociology of expectations in general and techno-scientific promises in particular, by explicitly addressing the linkages between promise-building, public

perceptions, and acceptance of new technologies, in a technology sector with a long history of partly broken promises.

Room N101 - Panel 017. MICROBES II: THE POLITICAL FUTURES OF MICROBIAL LIFE

Ana Delgado (TIK-Centre for Technology Innovation and Culture, University of Oslo)
Carmen Romero Bachiller (Department of Sociology, Complutense University of Madrid)
Pablo Santoro Domingo (Department of Sociology, Complutense University of Madrid)

As states experiment their way out of a pandemic and appeal to solidarity, the pharmaceutical industry profits from a global state of exception. Sectors of the public express skepticism towards vaccines, while antibiotics increasingly meet bacterial resistance. Scientific and activist research on the microbiome, support a proliferation on probiotic life styles. Fermentations, post-Pasteurian practices, breastfeeding and non-processed human milk gain in popularity in what has been termed “the probiotic turn”. As we move into the Anthropocene, microorganisms are also rediscovered as allies in caring for the environment. They are increasingly used for soil restoration, to degrade plastic, or to capture CO2. As people engage with microbes in care and ecological practices, they are also advertised by governments as holding great potentials and promise for new post-petroleum bioeconomies in Europe and beyond. Following a burst in interest on microbes in the public, science and policy, STS scholarship has also increased its attention on microbial life. Yet, what is STS talking about when discussing microbiopolitics? Surfing in the tension of microbial life as the next threat for human kind and the promises of the probiotic turn and their tentacular links to alter kin this panel explores the multiple ways in which the concept of microbiopolitics (Paxson, 2013) is and can be used at the crossroads of STS, anthropology, sociology, philosophy and political science to ask for the political promises and perils of this “intimacy with strangers” (Haraway, 2016:16).

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Session 1

1008 THE MICROBIOMISATION OF CLASS: RE-EMBODYING BUEN VIVIR, OTHERING MICROBIOPOLITICS

Andrea Núñez Casal Department of Science, Technology, and Society, Spanish National Research Council (IFS-CSIC)

Antimicrobial resistance (AMR), microbiome scientists insist, is the main cause of the loss of microbial diversity in high-income countries. Biomedical, public health, and science policy epistemologies describe AMR as a phenomenon of global proportions, horizontally distributed, affecting all in the same way, rich and poor. I sustain the opposite. AMR is not global. It does not affect everyone in the same way. This paper proposes what I call the ¨microbiomisation of class¨ as a speculative ‘proposition’ informing about the relevance of ‘questions or possibilities that were not taken into account’ (Stengers, 2018, p. 9) in the scientific production of the human microbiome but that have become important. These ‘questions or possibilities’ that have become important involve, I argue, microbiome science as the re-enactment of an immunologic of inclusion and exclusion. I focus on the links between microbiome science and AMR, an understudied theme in the social and cultural studies of postgenomic science. My argument is that a diverse microbiota, as crucial as it is for overall health and immunity as microbiome science indicates, is not accessible to everyone. Microbial diversity is conditioned by socio-economic status. The more affluent, the more microbial diversity, the less susceptibility to AMR, and vice versa. This social stratification of microbes and immunities, in turn, reflects the ways in which entanglements between neoliberal capitalism and the life sciences are lived and experienced differently in and by different bodies. In contrast to this parasitic microbiopolitics and drawing on ethnographic fieldwork on Galician and Korean food cultures, I examine how decolonial theories of Buen Vivir unfold possibilities to live and dying well with microbes. In doing so, I propose ¨microbial re-embodiment¨ as a microbiopolitics that does justice, troubles, and unsettles ¨immunitary privileges¨ at play in the ¨microbiomisation of class¨.

704 THINKING LIKE A HOLOBIONT. MICROBIAL SOIL RECUPERATION AMONG PLANETARY HEALTH WORKERS IN SOUTH INDIA

Daniel Münster (University of Oslo)

In this paper I will bring with microbial recuperation of soils in conversation with the emerging framework of planetary health (Horton et al 2014). Based on my anthropological fieldwork among natural farming activists in South India, I reframe their activity as planetary health work and explore how innovations in soil care practice contribute to enactments of human-soil dependencies based on understandings of distributed personhood at the microbial level (holobiont) and the foregrounding of symbiosis (Sariola & Gilbert 2020) in farming and society at

large. As microbiopolitics is about how “dissent over how to live with microorganisms reflects disagreement about how humans ought to live with one another” (Paxson 2014), I engage with agricultural soils to explore microbial understandings about the intersection of human health and the environment based on metaphors and relations afforded by soil. Of special importance are practices of experimenting with microbial means of improving soil health such as the use of inoculants, composts and fermented compost teas that act to counter the devastations of productivist agriculture in post-Independence India. I explore how microbiomes invite us to think health and wellbeing from a microbial point of view as digestive (Mol 2021), eating and being eaten, symbiotic, and metabolic rationalities affecting materially and semiotically distributed holobionts.. I will take this material to reflect on the potential and shortcomings of recent approaches to ecologize medicine in the discourses on One Health and Planetary Health (Whitmee et al. 2015) by interrogating them through the lens of soils as a planetary microbiome. I will interrogate tendency in planetary health frameworks of taking the planetary (and its multiple crises) as narrative device for scaling up responses to threats to human health. Soils as relational, anthropogenic and plasticity and anthropogenic quality of soil, invites James Lovelock’s hypothetical “planetary physician”

977 GREEN GOLD – TRANSLATIONAL SCIENCE ON LIVING CELL FACTORIES AND THE HOPE OF ENGINEERING METABOLISMS TO ENABLE A SUSTAINABLE FUTURE

Vibeke Pihl (RUC)

Residual biomasses from industrial agriculture, fishery and forestry have recently been labeled a “green gold”, which is to enable Denmark’s turn away from fossil-fuel dependence and transition into a bioeconomy. The nexus of the transition is to come from science using metabolic engineering to establish cells as living factories capable of converting biomasses thereby creating an ecologically closed loop. While the goal of these metabolic conversions is to enable a sustainable future, the work of living cell factories is also tied to a promise of Denmark’s becoming a leader in the emerging bioeconomy. Yet, even a surface look at the concepts and profit motives involved in these scientific practices suggest that the emergent bioeconomy may be trapped in what Tsing (2015) calls a dangerous cycle of ruin and promise. Using ethnographic fieldwork, the project engages closely with the methods, conceptions, and practices of scientists, unfolding how intricate interconnections between old and new conceptual and material infrastructures interact to create the science transforming cellular metabolisms to enable faster conversions of biomasses into bio-chemical components. The aim is to understand the scientific, social, ethical and economic implications of the ways knowledge is being shaped in the emergent bioeconomy including a turn to bacteria and yeast as promises of hope. A further perspective the project will consider is the interrelatedness of life forms (Helmreich and Kirksey 2010, Shapiro and Kirksey 2017) focusing on the exchanges unfolding between cells, scientists and biotech industry, as the present calls for ways to move “beyond the Anthropocene” where human aims and intentions can no longer be prioritized (Haraway 2016). The science on cells as living factories requires us to understand the interdependency of our past infrastructures and the effects of industrializing living organisms for how we come to act and think around sustainability in the present.

173 SPREADING: HOW TO CONCEPTUALISE MICROBIAL CIRCULATIONS

Ana Delgado (TIK-Centre for Technology, Innovation and Culture)

Conceptualisations of the way(s) in which microbes circulate within the social have been monopolized by the natural sciences. Dominant ways of conceptualizing microbial spreading have drawn upon scientifically informed notions of infection, contagion or immunity. Yet microbial circulations are subject to a broader range of social conventions. Hygiene and social distancing practices that became popular during the COVID-19, aimed at preventing or slowing down microbial circulations. Yet in other instances, people engage in facilitating microbial circulations of different sorts, as when they share their microbial cultures for other people to further experiment with fermentations, or when they report those fermentations in media platforms such YouTube.com. Scientific microbial collections stored in open repositories and human microbiota open biobanks are further examples of microbes being shared through digital mediation. How can STS conceptualize microbial circulations in a way that accounts for the multiple ways in which we relate with and through microbes? In the spirit of experimenting with concepts, this presentation invites to consider multiple modes of microbial sharing and spreading, and the kind of mediations and microbiopolitics that make them possible and that they generate. The presentation will focus on open science grassroots practices, and in particular, on how people share their home experiments with fermentations in blogs. In providing an account of how microbes are made public, the presentation plays with the concept of ‘literary technology’ (Shapin, 1984) to explore microbiopolitics as public life.

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Room N118 - Panel 020. SITUATING ETHICS: HOW NORMATIVITY SHAPESHIFTS AS TECHNOSCIENCE TRANSMOGRIFIES

Session 2

696 FACIAL RECOGNITION AT THE FARM: SURVEILLANCE AND ETHICS ACROSS SPECIES

Madisson Whitman (Columbia University) Geneva Smith (Dartmouth College)

From Kenya's lions to Ireland's cattle to brown bears in Alaska's Katmai National park, facial recognition technologies (FRT) have been turned on the animal kingdom for reasons ranging from conservation to agricultural productivity. These are the latest in a rapid proliferation of data collection and related technologies ever apparent in changing surveillance contexts. In human contexts, the development and use of facial recognition technologies has prompted criticism from scholars and activists over the ethical implications of FRT and potential for disparate impacts for marginalized communities (Benjamin 2019; Buolamwini et al. 2021; Stevens and Keyes 2021). FRT used on animals, however, does not seem to inspire similar concerns among technologists. This exploratory paper examines boundaries between humans and animals as set by developers and users of FRT, where the ethical issues regarding FRT for humans appear to stay in place.

324 DE-ESCALATION AS A TRAVELING TECHNOLOGY: THE ETHICS OF PARTIAL ABSTRACTIONS

Maja Sisnowski (University of Amsterdam)

In this paper, I explore the shifting ethical affordances of de-escalation, a social technology which is routinely deployed, trained and mandated as best practice to approach moments of aggression and potential violence. Drawing on ethnographic engagement with de-escalation practices in German health and social welfare services, I show how de-escalation transports and transforms situated normativities in relation to violence and aggression, by following some of its abstractions.

Encompassing "communication, self-regulation, assessment, actions, and safety maintenance" (Hallet et al. 2017), de-escalation is a situated and embodied practice, which heeds context and attunes to difference. Yet as de-escalation travels between sites and situations, it partially abstracts from the specific bodies, contexts and differences of a singular event. Most commonly, de-escalation techniques arrive in institutional settings through staff trainings, which mobilize and trade examples and cases of (de-)escalation in particular instances, as well as behavioral universals.

As it gains currency across professions and settings, the travels of de-escalation are facilitated through taking on technological attributes and aspirations, such as schematization, replicability, universality and effectivity. In this paper, I follow how particular bodies and contexts dissociate from or cleave to the abstractions of de-escalation, and how difference is made along the way. Specifically, I explore how these partial abstractions impact the ethical possibilities that de-escalation carries. With its focus on behavior and on averting immediate harm, de-escalation in theory hefts aggression and violence out of the realm of moral judgment. Its logics thus engage in complex ways with the values and priorities which ordinarily govern institutional interactions, transforming, temporarily suspending or succumbing to them. To capture these subtle shifts, I turn to the bodies, contexts and differences of de-escalation as sites of ethical affordance, mobilized, touched and made sense of through "minor gestures" (Manning 2016) as much as grand narratives and structural imperatives.

427 DEVELOPING SOFTWARE TOOLS FOR RESEARCH INTEGRITY: TRAVELING VALUES BETWEEN NORMATIVE FRAMEWORKS AND TECHNOLOGICAL PROPERTIES.

Hesselmann Felicitas (Humboldt-Universität zu Berlin) Fonseca Rocio (Humboldt-Universität zu Berlin)

Promoting research integrity is seen as a central value in academic discourse, and as crucial in order to produce reliable results, as well as in maintaining public trust in research. What research integrity means and how to promote it, however, is subject to debate and contention. Currently, we see the development of a variety of automated software tools that should help with the improvement of research integrity in different ways. The development of these technological artefacts takes place in an uneasy space fraught with different normative claims and expectations: Understandings of research integrity are quite heterogeneous and vary depending on which research fields, communities and application scenarios the tools are envisioned to address So how are values negotiated, shifted, or translated in the process of software development?

The proposed contribution will compare material from two case studies focused on the development of software tools created to screen and automatically flag potential problems in the reporting of biomedical research. A commercial tool created to enforce standards, and an open source tool aimed at screening publications for irregular reporting, are technologies which promise to enhance the reliability and reproducibility of the scientific record. Using interview data, we trace how scientist leading the development of these technologies invoke different, and often conflicting, normative frameworks when discussing decisions regarding the design of the tools. Specifically, we highlight how the (envisioned) travel of values already shapes the development process. Developers continuously translate between their normative frameworks and the technical possibilities and limitations of the software they are developing. In this back-and-forth motion they repeatedly redefine the problems and intended uses of their tools, as well as the responsibilities of key actors in the scientific field

portrayed as the “ideal users” of these new technologies, simulating the tools’ travel as they go along their development process.

826 THE RECONFIGURATION OF HOUSING PROFESSIONALS AND THE MOBILIZATION OF NORMATIVE AND MORAL DISCOURSES IN THE SERVICE OF ACTIVE HOME LIVING

Rachel Hale (Cardiff University) Karen Henwood (Cardiff University)

To meet UK decarbonisation and climate change targets, significant changes to existing and future housing stock are being called for. Low carbon homes are being realised in different ways, encompassing a range of different energy sources, technologies, services, building materials, designs and locations. Active Homes, one example of innovative sustainable housing, aim to have zero carbon emissions and to produce and share energy; thereby, disrupting existing socio-technical structures and processes, to provide electricity grid flexibility. As sociotechnical innovations, for residents to be able to live well in Active Homes, and achieve low-cost energy sufficiency, there may be an expectation among housing developers that some energy practices and other elements of their daily lives may be altered.

The ‘Living Well in Low Carbon Homes’ study explores stakeholders’ roles in developing Active Homes and residents’ experiences of living in them, across five UK case sites. In this paper, we draw on stakeholder and resident interview data that illuminates how housing professionals involved in Active Home developments are mobilizing normative and moral discourses about everyday home energy practices; thereby, expanding the boundaries of their conventional domain of expert authority, the technical, to include low carbon home energy technology, and how this is coupled with the addition of new domains of expert authority, the moral and normative aspects of everyday home energy practices. Our data reveals a shift in some housing professionals’ role from not only how to use home energy technology, but to how residents should or should not live in low carbon homes, from a moral and normative perspective. We discuss whether these discourses are in fact post-hoc rationalisations, due to technical affordances and requirements of the innovative homes, and are mobilized to change residents’ practices under the pretext of self-improvement, considering how and why some residents resist these discourses.

942 THE ETHICS AND POLITICS OF URBAN TECHNOLOGICAL EXPERIMENT IN THE U.S.

Nicole West Bassoff (Harvard University)

The concept of the “smart city” has emerged as a powerful mobilizer of public and private efforts in the U.S. to use networked digital and data technologies to optimize city services, drive economic growth, and enhance urban life. Sensors, cameras, and internet networks are being woven into the fabric of the city through public-private partnerships that are rarely preceded by public debate. Instead, these projects proceed as part of an assumed mandate for states and municipalities to facilitate technological innovation and economic development. Often, however, smart city initiatives become mired in controversy, suggesting that what counts as “smart” urban development is still hotly contested.

Applying a co-productionist STS approach (Jasanoff 2004), this paper proposes that as these urban experiments in technology contribute to the imaginary of an increasingly disembodied and digitized public realm, citizens’ foundational claims and dependencies on the city are also being reimagined. And yet these constitutional questions about the social compact between city and citizen during technological experiment have not been seen to necessitate the development of novel ethical and political frameworks. Looking at two cases of controversy over San Diego’s smart streetlights and New York City’s wifi kiosks, this paper identifies dominant ethical framing devices in smart city discourse—privacy/security, the digital divide, and public participation—and asks where these come from and which (expert) groups have been authorized to speak to them. I argue that by narrowing the debate to ethical concerns that are legible to and actionable through technology, these ethical frames are limiting the possibilities for normative deliberation around smart city projects. I suggest that these ethical frames do not do enough to address two constitutional dimensions of the shifting terrain of citizenship in the city: the blurring of public and private lines, and the presumption of communicative rationality as a cornerstone of democracy.

Room N108 - Panel 028 TECHNO-POLITICS OF INTEROPERABILITY

Session 2

119 INTEROPERABILITY AS MULTI-SCALAR SOCIOTECHNOLOGY

Annalisa Pelizza (University of Bologna and University of Twente)

By definition, interoperability aims to connect two or more entities which are detached. It refers to two distinct ("inter") entities which start operating ("operability") in some coordinated way. Yet this process is performative: by becoming interoperable, the entities accept to re-order their own boundaries and reconsider their distinction. As such, interoperability can be seen as a technology that allows studying the macro consequences of micro developments: by coordinating operations at the micro level, overall boundaries can shift as a result.
This presentation draws on Pelizza's ongoing book writing to propose a conceptualization of interoperability as a multi-scalar sociotechnology that recovers one of the foundational STS debates: the one about micro vs. macro level of analysis. First, I will recover such debate through texts by Cicourel, Knorr-Cetina and Latour, in order to theorize the multi-scalar nature of interoperability. Then, I will illustrate this understanding through examples from my past research of how interoperability can redefine the boundaries between national and local, private and public institutions. Finally, I wonder whether and how such conceptualization can be extended to the supranational level of European integration.
To this end, the presentation will map what is usually brought to operate together in the European area of Justice and Home Affairs. Interoperability among European security databases has indeed become a topic of high relevance for the EU legislator, as well as for national authorities and supranational EU institutions. How can we understand the ways in which interoperability of data infrastructures for securitization entails the shifting of European institutional boundaries?

1056 HUMAN IDENTIFICATION INFRASTRUCTURING (HII) AT THE REFUGEE REGISTRATION FACILITY IN GERMANY

Andrea Berger (University College Dublin)

This is a research in progress paper that sums up an analysis chapter of my PhD on the development of Human Identification Infrastructuring (HII) in asylum case processing after the Schengen Agreement, that I am currently working on. Places of registration seldom have received attention in respect to consequences of the techno-political alteration of migration control after the Schengen Agreement. However, scholars have argued early on, that any further reflection about the consequences of the interoperability of databases for the documentation of migrants depends on how local authorities make use of these tools.
I use infrastructure as a concept to figure out material-semiotic aspects of this infrastructural transformation. Infrastructure, as the facilitation of "relations between things" (Larkin, 2013, p. 329), implies interoperability as end or specific modus of this facilitation. I ask the question of the consequencesof infrastructural change in respect to human identification work at the point of refugee registration in Germany. To this study, registration constitutes one part of the trans-situational processing of asylum cases within the bureaucratic domain. For the analysis of observation and interviews I adapt a praxeological materialism framework after Thomas Scheffer (2017). Hereafter, I conceptualize the enactment of Human Identification Infrastructuring (HII) through its situating in the situation of registration. I ask how HII participates in the (re)configuration of refugee registration practices in Germany, and what consequences this(re)configuration has for the bureaucratic processing of asylum cases.

604 STEPS TOWARDS A DIGITAL IMMIGRATION SYSTEM

James Besse, Science, Technology and Innovation Studies, University of Edinburgh

This paper examines the digitalization of the British immigration system through the introduction of remote and online immigration status verification. The start of this process has been the introduction of the EU Settlement scheme (EUSS) which functions using a centralized online system accessible via the Gov.uk website, rather than a physical document, for immigration checks by landlords, employers, government agencies, and border guards. The EUSS was followed in quick succession by the application of its approach to British Overseas National (BN(O)) visas and student and work visas for EU citizens
The paper shows how these schemes rely on, and contribute to, the creation of an information infrastructure for online immigration status verification. This infrastructure comprises a range of interlinked systems for sharing non-citizens' immigration details with devolved immigration controllers and government offices, with the Home Office at the centre. However, I show how the interoperability between these systems is fragile, changing, and shaped by the downstream actions of users and intermediaries. Contributing to the ongoing dialogue between STS and Critical Security Studies, and based on interviews and policy document analysis, I chart the development of this infrastructure in two steps. First, I examine the policy articulation of the EUSS and its sister systems, showing how it has developed in response to a variety of failed attempts and policy legacies (and finally, Brexit), and what it implies for the relationship between different government departments, and government, migrants, and the private sector. Second, I explore this infrastructure's day-to-day implementation, and how its success relies on the invisible work of a range of actors: the private sector, status holders, and civil society groups, who

are placed into new relationships and have new obligations, and whose actions have routinely shaped the development and success of the infrastructure in dramatic ways.

121 FOLLOWING THE BORDER: INTEROPERABILITY & BIOMETRIC MOBILITY IN THE ANGLOSPHERE

Jamie Duncan (University of Toronto)

It is increasingly common for scholars to recognize that borders are mobile in their operations. The proliferation of data-driven surveillance in border policing has intensified the capacity for borders to appear across multiple sites, often far from the limits of the territorial state. This paper advances an approach to following borders by attending to the social and physical flows that enact a specific border security project. I examine the emergence of automated biometric-based information exchanges among the Migration 5 (M5) partners: Australia, Canada, New Zealand, the United Kingdom, and the United States. I explore how the imperative of organizational, technical, and legal interoperability in border security is negotiated among these partners. I argue investigations into this question are enriched through attention to the seemingly banal circulations of policy knowledge, technical standards, and official narratives pertaining to border surveillance and security. The M5 partners began exchanging limited information about high risk 'third country nationals' in 2009 to inform immigration decisions. By 2018, they were systematically collecting and exchanging millions of data points pertaining to people seeking 'admissibility' to these states each year. Fingerprints link individual travellers to digital dossiers comprising basic biographical information, travel histories, risk scores, and intelligence flags from many sources. Using publicly available policy documents and official communications as well as materials obtained via Access to Information requests, I offer a preliminary analysis of the emergence of this partnership in the years since 2009. Drawing on insights from the fields of mobilities, science and technology studies, and critical security studies I show how 'following the border' can deepen scholarly understandings of how borders move. In doing so, this study adds to a rich body of research on transnational border surveillance and policing in Europe by introducing a novel and, to my knowledge, unexamined case for comparison.

Room N112 - Panel 034. PHARMACEUTICAL TRANSFORMATIONS: ADVANCED THERAPIES, PERSONALIZED MEDICINE AND THE REMAKING OF HEALTHCARE

Session 2

509 POLITICS AND PRACTICES OF «PHARMACEUTICAL EXCEPTION» IN QUEBEC

Pierre-Marie (DAVID Faculté de Pharmacie) Kayley Laura Lata (University Mc Gill) Jean-Christophe Bélisle-Pipon (Simon Fraser University) Marie-Eve Bouthillier (Centre intégré de santé et de services sociaux de Laval)

Although exceptional programs for drug access or “medical necessity” exception drugs have been incorporated in Quebec health law, exceptional pharmaceutical pathways redefined in the 2015 health reform have become an important channel to access expensive and unevaluated drugs such as gene therapies in hospitals. Budgets for such drugs have increased by 25% a year in the past 5 years, and the overall amount allocated has reached nearly a billion CAD $ in a province of 8 million people. These “pharmaceutical exception” access programs, rooted in structural and contextual considerations (e.g. long-standing incentives for the pharmaceutical sector), now appear as a key feature of new pharmaceutical business model based on limited patients targeted with almost unlimited drug prices.
Through a social, historical and legal analysis of provincial health law evolution and legislative debates, as well as interviews with policymakers and hospital committees evaluating exceptional access requests, we explore the various ethical and political arguments on such issues. We envision the reconfiguration (both in law and care) of a politics of “pharmaceutical exception”, convenient for the pharmaceutical industry new business model and politically sensitive for policy makers.
Our research discusses STS/critical medical anthropology concepts developed in southern settings such as “government by exception” (Nguyen, 2009) and «experimentality» (Rottenburg, 2009) to shed light on experiences, exceptional but gradually more and more common, across countries with social and health assurance. We address how new forms of “pharmaceutical exception” are gaining force in northern settings and how they hold important issues for the future of public healthcare systems.

147 COOLING THE PATIENT OUT: DISTRIBUTED DECISION-MAKING AND HEATED DEBATES OVER ACCESS TO ADVANCED THERAPIES

Sarah Wadmann, (VIVE - The Danish Center for Social Science Research) Laura Emdal Navne (VIVE - The Danish Center for Social Science Research) Amalie Martinus Hauge (VIVE - The Danish Center for Social Science Research)

Advanced therapies, like new gene therapies, are increasingly being marketed in Europe and beyond. While therapeutically promising, the advanced therapies come with unprecedentedly high pricing. In welfare state settings characterized by ideals of equality and universal access, their introduction, therefore, spurs heated discussions about fair distribution of healthcare resources: What are fair principles of distribution, and who is accountable for providing and withholding treatment? Based on a case-study of access restriction to a pharmacogenetic treatment in Denmark, this study explores how accountabilities are distributed and re-distributed when rationing decisions becomes an object of public scrutiny. Based on analysis of patient complaint cases and interviews with patients, relatives, and patient organization representatives, we find that the nexus of rationing decisions is in flux. Patients and their relatives are referred back and forth between organizational units when seeking to understand on which grounds treatment access is being restricted. Suggesting a parallel to Goffman’s (1952) notion of ‘cooling the mark out’, we suggest that the institutional set-up that is meant to ensure procedural fairness and impartiality in resource allocation also serves to ‘cool the patient out’. Goffman designated the process of ‘cooling’ to a specific actor, a ‘cooler’ who takes on the role of consolidating the upset ’mark’, i.e. the victim of the situation. In this paper, we argue that it is the distributed accountability of rationing decisions that has a chilling effect on the heated rationing debates. From the vantage point of political-administrative decision-makers, cooling may be necessary to ensure effective and rational resource distribution. For the patients and relatives who are being ‘cooled out’, however, the process does not always lead to acceptance of the social circumstances: Attempts of cooling may prompt a renegotiation of the relationship between the self and society and fuel patient activism.

1018 DOES THE GROWTH OF REAL WORLD EVIDENCE REPRESENT AN EPISTEME TRANSITION IN BIOMEDICAL KNOWLEDGE PRODUCTION?

Paul Martin (University of Sheffield)

There has been an explosive growth in the development of Real World Evidence (RWE) within the biopharmaceutical sector in recent years. In contrast to the data and evidence generated in traditional clinicals trials – the Gold Standard within biomedicine – RWE involves the conversion of heterogeneous data from a wide range of sources that lie outside the clinic into new forms of evidence. This includes data collected from administrative and electronic health records, disease registries, as well as wearable devices and other tools that capture different dimensions of patient experience. RWE is being increasingly used in all stages of drug development, assessment, and reimbursement. Drawing on examples from the use of RWE in relation to rare diseases and orphan drugs, this paper explores the extent to which the growth of RWE represents some form of

“epistemic transition” within biomedicine. In particular, it will trace a series of transformations in the collection, use and governance of biomedical knowledge, including: who produces knowledge e.g. the growing role of patients; how this knowledge is produced e.g. digital data collection, big data analytics; where it is produced – in the “real world” - e.g. decentralised trials; how it is assessed and regulated e.g. in conditional reimbursement; and what counts as valid evidence e.g. new evidential standards and conventions. These changes will be related to the development of personalised medicine, new therapeutic modalities (e.g. cell and gene therapy), and placed in the context of the growing digitisation of biomedical knowledge and the creation of massive data infrastructures and platforms. The analysis will offer reflections on the significance of RWE for the future governance of drug development, approval and use, and the changing biopolitics of the pharmaceutical sector.

233 MTOR, NMN, METMORFIN AND FASTING: TECHNOSCIENTIFIC IMAGINARIES OF LONGEVITY

Ilke Turkmendag (Newcastle University)

Treating the root causes of ageing is becoming an important market. In 2021, Switzerland’s Longevity Science Foundation committed to distributing $1bn to longevity projects over the next 10 years, joining the other investors across the world.
The longevity protocols include both low cost and high-cost interventions from fasting to the use of infrared saunas and hypobaric chambers, with the aim of enhancing human life and avoiding ageing related disease. The investment in anti-ageing research, emerging consumer markets in longevity products, availability of consumer diagnostic tests and tools (including gene, blood and gut health tests, sleeping, heart rate and glucose monitors and supplements), the rise of functional medicine, and the increasing use of social media to ‘spread the word’, all play role in strengthening the longevity movement.
Drawing on the qualitative analysis of podcasts, Youtube videos, and websites created by some of the longevity experts, this paper explores the technoscientific imaginaries of longevity. It explores the agency of longevity molecules, processes, and supplements, the representation of scientific evidence behind the suggested protocols, competing knowledge claims, and the individualisation of health risk management.
The longevity discourse takes its strength from advances in lifespan research but also the failings of the current medical practice that deals with the symptoms rather than the cause. It aims to develop new medicines and therapies to prevent and cure, rather than merely manage the age related disease. While the longevity discourse can be empowering, longevity protocols depend on individuals’ intellectual and financial ability to track, test, and hack their own bodies. The longevity discourse shifts the responsibility from the big pharma, big food, and the state, to the individuals, creating new challenges to address the longstanding structural drives of health inequalities.

914 STIMULANT PSYCHOTROPIC DRUG USE IN ADULTS: THE LIQUID BOUNDARIES BETWEEN TREATMENT AND COGNITIVE ENHANCEMENT

Lauren Predebon (Universidad de la República, Uruguay)

Andrew Lakoff (2005) called "pharmaceutical reason" the underlying rationale of drug intervention in the new biomedical psychiatry, guided by a norm of ‘‘specificity’’ of effect: a psychotropic drug should treat the specific organic condition related to a mental disorder. Nevertheless, over 70 years into the modern psychopharmacology era, not only the organic basis of mental disorders remain unclear but also the specificity of the use of psychotropic drugs to target any disorder at all. In this sense, prescription stimulant drugs present a particular case: although they have been usually linked to the ADHD diagnostic, they have also been largely used off label for cognitive enhancement. In practice, many times both uses overlap, making it difficult to draw a definite line between them. Not rarely, blurring such lines should be not credited only to psychiatrists but also to users, who may find in it a sort of “diagnostic liquidity" (Lakoff, 2005). Drawing on in-depth interviews carried out with adult users living in Montevideo, Uruguay, this paper explores the intricate ways these users manage to obtain the stimulant psychotropic drug and make sense of its use. Transforming the drug as well as themselves through their narratives, it is possible to think of the use not only as a health act but also as a political one, which simultaneously enlightens and brings questions about the individual and collective will and responsibility over psychotropic drugs use.

733 DESIGNING FUNCTIONAL BODIES: ARTIFICIAL MOLECULAR MACHINES AND THE FUTURE OF BIOMEDICAL INNOVATION

Renan Gonçalves Leonel da Silva (ETH Zurich) Alessandro Blasimme (ETH Zurich)

The 2016 Nobel Prize of Chemistry has been awarded to a distinct group of researchers “for the design and synthesis of molecular machines”. According to Balzani et. al. (2000), Artificial molecular machines can be described as “an assembly of a number of molecular components that are designed to perform machine-like movements (output) as a result of an appropriate external stimulation (input)”. Despite being considered a novelty, the tailoring of molecular machines results in a long trajectory of disciplinary encounters between Sciences and Engineering research activity, which has been moving towards the control and re-design of complex biochemical and biological systems. Since the 1980s, fields such as Physical Chemistry, Chemical Engineering, Molecular Systems Engineering and more recently Biomedical Engineering have promoted a fruitful exchange of

speculations on the feasibility of molecular machines, shaping new hypotheses, theories, and new methodologies. This approach has been particularly useful for the study of advanced biological systems, impacting the creation of new research and development centers focused on applications of nanoscale biotechnologies in health. This article discusses how the development of artificial molecular machines is transforming the logic of research and technological development in biomedicine to what we call "molecular machinery rationale" - with impacts already evident in the scientific imagination about the future of health. The findings are based on an online ethnography supported by the application of literature review, interviews with experts on molecular systems engineering from five countries, and documentary research. Artificial molecular machines have changed the way in which scientists imagine the future of biomedicine, impacting the possibility of engineering biological systems, from the molecular level to the tissue and organ level, to receive therapies with a greater chance of success

Room N107 - Panel 037 CARE AS A HIGH-TENSION ZONE: INVESTIGATING THE AMBIVALENCES OF CARE IN THE MIDST OF THE PANDEMIC

Hannah Grün (Helmut-Schmidt-University, Hamburg, Germany)
Lisa Wiedemann (Helmut-Schmidt-University, Hamburg, Germany)

Tensions are a crucial concept in STS studies on care (Gill et al. 2017; Mol et al. 2010; Lindén/Lydahl 2021; López-Gómez 2020). Care unfolds tensions that need handling: tensions "between individual and collective needs" (Thygesen/Moser 2010: 137); between different values inscribed in care (Lydahl 2021: 116); between subjective experiences and objectivation practices (Pols 2012: 71); "between feeling safe and annoyed" (Wiedemann 2021: 50); "between the scales of policy and situated care practices" (Gill et al. 2017: 14); or "between taking control and being erratic" (Mol/Law 2004: 57). Even if something has worked well for a while, it may unexpectedly come into tension with something else or slip again, thus good care depends "on the carers' ability to experiment with what can be done and to respond to the ever emerging frictions" (Thyggsen/ Moser 2010: 138). Hence, in reference to Susan Leigh Star (1990) it is worth to conceptualize and analyze care more widely as a high-tension zone (Wiedemann/Grün 2021). Noting moments of ambiguity, ambivalence, conflict or struggle steers the focus away from a "charmed" image of care and helps to find a "critical stance toward the politics of care" (Murphy 2015: 3).

However, tensions in care settings mostly become visible through a long-term examination of the daily and mundane enactments of care – through the exploration of specific situations and temporalities, with specific knowledge, bodies and tools (Pols 2019). But how do we get to the zones of specificity in times of pandemic contact restrictions, lockdowns, and increased vulnerability? More-over, since the rise of the pandemic care has become even more tensional. New ethnographic themes and contexts of conflicts, frictions and ambivalences engender that must be documented and understood in new ways which demands new research tools, methodological inventions and cooperative work.

The panel is intended to provide a space for sharing experiences: experiences on the conceptualization of care as a high tensions zone, on the access to tensions in times of infectious sociality and the increase of tensions in pandemic settings of care, calling for a focus on the specific more than ever. Today, at the threshold of an unknown (post-)pandemic scenario, there is not only an urgent need to produce knowledge about those whose visions of better futures dominate public narratives but to reflect the complexity, uncertainty, and tentativeness of our present research routines and scientific politics. In doing so, we invite contributors from all kinds of disciplines working on tensions in the field of care and who are currently dealing or have been dealing with the following questions:

- How to empirically investigate tensions in (post-)pandemic times?
- How to make sense of empirical data collected before the beginning of the pandemic?
- How to collect empirical data on sociomaterial care arrangements in the midst of a pandemic?
- Which (new) practices of ethnographic inquiry have been emerged?
- How to the grasps radically changing logics and practices of care and how to reveal the persistent ones?
- How to theorize pandemic dynamics and tensions?
- How is exploring the high-tension zone a way to "take better care of how we care" (Martin et al. 2015: 631)?

This panel is thought to exchange experiences as well as to encourage cooperative work.

Session 1

195 HPV VACCINATION AND CARE-POLICY RELATIONS: TENSIONS BETWEEN AN 'INCLUSIVE' POLICY AND MUNDANE ENACTMENTS OF CARE IN SCHOOL HEALTH

Lisa Lindén (Department of Sociology and Work Science, University of Gothenburg) Ylva Odenbring (Department of Education, Communication and Learning, University of Gothenburg)

This presentation explores relations and tensions 'between the scales of policy and situated care practices' (Gill et al. 2017: 14) through the lens of 'a double vision of care' (Lindén & Lydahl 2021). Since the autumn of 2020 a new human papilloma virus (HPV) vaccination policy has been adopted in Sweden that includes all children in the fifth grade of primary school, as prevention for a range of HPV-related cancers. In a long-term ethnographic project focused on the introduction of this policy, we observe HPV vaccination appointments in schools and we conduct interviews with school nurses, children, parents and policy-makers. In the project, we are interested in exploring ways of 'holding together in tension' dominant policy visions of the new HPV vaccination programme as 'inclusive' and 'enabling herd immunity' with mundane enactments and specificities of care at schools. We attend to enactments of the new HPV vaccination policy in schools to explore 'possibilities of abstraction alongside the particular and situating work of cleaning-up (again and again) those here-now places where those visions are pursued' (Winthereik & Verran 2012: 48).
In this presentation, we build upon interviews with school nurses and policy-makers. In the interviews, we have identified a tension in 'modes of doing good' (Pols 2003) between the vaccination as 'a flow' of children getting vaccinated and the vaccination as a matter of 'responding to' the particular and often unpredictable child. Building on this, we discuss tensions in the introduction of the HPV vaccination policy as a way of engaging a 'double vision of care' in STS that holds together specificities of care with multi-layered politics of public health, sex and

sexuality. We will also build on the interviews to reflect upon methodological possibilities and troubles in trying to get at 'zones of specificity' in the midst of the pandemic.

162 FRAMING THE PANDEMIC: MULTIPLYING 'CRISIS' IN DUTCH HEALTHCARE DURING THE EMERGING COVID-19 PANDEMIC

Bert de Graaff (Erasmus University Rotterdam) Sabrina Rahmawan-Huizenga (Erasmus University Rotterdam) Hester van de Bovenkamp (Erasmus University Rotterdam) Roland Bal (Erasmus University Rotterdam)

The COVID-19 pandemic is often framed as a crisis in the context of national level healthcare systems being pushed beyond their limits. Whereas a crisis is defined as a specific process of transition (Hay, 1996), 'crisis' is also conceptualized as a structural condition of modernity (Koselleck & Richter, 2006). In this paper we focus on crisis as a specific language of organizing healthcare. Framing a situation as a crisis of a particular kind allows for specific problem-definitions, legitimate knowledgebases and the in- and exclusion of relevant stakeholders. Using this approach, we aim to understand the dynamics of, and tensions in, organizing healthcare and collective action amongst actors in healthcare in relation to these framings (Kornberger, Leixnering, and Meyer 2019).
We make use of our multi-sited ethnography of the Dutch crisis-organization in healthcare in response to the COVID-19 pandemic. Focusing on decision-making at the regional level we were able to move with our participants through successive waves of the pandemic. While reflecting on this movement, in this paper we analyze the organizing work of our participants as constructing multiple pandemic-as-crisis. We detail three evolving framings of the pandemic: a crisis of scarcity, a crisis of postponed care and a crisis of coordinating acute care. Doing so, we identify tensions between healthcare sectors; between informal networks and formal work; between centralized, top-down crisis-management and local, bottom-up work, and between ingrained institutional logics. Our findings underscore how the emerging crisis-organization is dependent on pre-pandemic institutional arrangements; existing tensions are made more visible, such as between hospitals and long-term care, while new tensions emerge as well, such as between top-down coordination of care and professional judgement. These multiple ways of framing the pandemic-as-crisis, together, allow us to attend to the manifold tensions emerging in and between the collectivities organizing healthcare during the pandemic.

78 PROLONGING LIFE OR ATTENDING TO DEATH? NEPHROLOGY CLINICAL PRACTICES AS A HIGH-TENSION ZONE

Anna Mann (University of St.Gallen)

When dialysis was invented in the 1950s, it was a rare and experimental procedure that kept alive young and, except their kidney failure, healthy patients. Nowadays, it is a standard treatment available all over Europe in the provision of health care to increasingly old and multi-morbid patients. Current nephrology clinical practice is, thus, caught up in a tension that pervades medicine persistently: prolonging life versus attending to death. How does it navigate it?
This presentation is based on ethnographic fieldwork carried out in Austria between 2016 and 2018 and, so I hope, in spring 2022. Mobilising an approach to 'good care' as enacted in daily life practices in the provision of health care (Mol 2008; Mol, Moser, Pols 2010), the presentation teases out how 'sensible care' [sinnvolle Betreuung] is crafted in mundane processes of treating kidney patients in a dialysis unit in Vienna. It will show first how before the pandemic 'sensible care' was achieved not through an ongoing tinkering and experimenting, but a crafting of uncertainties and interruptions of the routines geared towards prolonging life. I hope to, secondly, provide some first insights into the ways in which the pandemic has reconfigured the crafting of 'sensible' treatment and care in nephrology clinical practice these days.
Through a case study of a persistent tension of medical practice – prolonging life versus attending to death – the presentation, thus, hopes to contribute to ongoing discussions on care as a high-tension zone and careful (and possible) ways of accounting for this in the midst of an ongoing pandemic.

906 HOW IS CONTACT TRACING LIKE CULLING? – AN ETHNOGRAPHIC ACCOUNT OF HIGH-TENSION ZONES IN ONE PUBLIC HEALTH OFFICE DURING THE COVID-19-PANDEMIC

Hall Kevin (Philipps Universität Marburg)

How is contact tracing like culling? Drawing on John Law's article Care and killing I seek to make sense of the multiplicities present in the public health practice of contact tracing. During the COVID-19-Pandemic contact tracing and so-called lockdowns were employed as "double-stranded strategies of pandemic control" (Mezes & Opitz 2020). This approach had far reaching implications for the livelihoods of many people. Within the medical disciplines this problem has been negotiated as a tension between patient-centred care (family physician) and population health (public health). In this paper I problematize this tension by drawing on ethnographic fieldwork I conducted during the second and third wave of the COVID-19-pandemic in a public health office as a contact tracer. As a participant observer I became complicit with state authorities in ordering quarantines and potentially threatening livelihoods for the "bigger picture" while at the same time struggling to keep my empathy. Following John Law's conceptualization of the multiple care practiced by veterinarians during the foot and mouth cullings in the UK in 2001 I ask how contact tracers care for the person on the other end of the landline?; how do they care for their self?; and how do they care for the bigger picture? In simultaneously caring for the self, the other and the population – a population susceptible to the pandemic agent and of which they are a part of – I show how contact tracers and myself as navigate and negotiate these multiplicities as a high-tension zone (Star 1990).

543 "TRACING FROM BELOW": SITUATED CARE PRACTICES IN A COVID DIGITAL STRATEGY

Camila Hidalgo (Munich Center for Technology in Society - TUM School of Social Sciences and Technology)

Contract tracing apps have been widely implemented to support the loosening of contact restrictions in Europe. Narratives such as 'download this app to protect your loved ones' have promoted their uptake, as in the case of the NHS COVID 19 app in England and Wales. This work traces the interactions between the users and such apps from below, paying close attention to the tensions between the scales of policy and situated care practices (Gill et al., 2017, p. 14). Inspired by the Walkthrough Method (Light et al., 2018), I conducted user-led walkthroughs combined with interviews with non-users and experts and document analysis. This study reveals the unexpected app uses and apps mixed up within a COVID strategy through the users' practices while using the app in England and Wales. It acknowledges "the fine line between care and surveillance" (Miller et al., 2021) embedded in the app's design and the app's uptake's ambivalence in supporting the governmental response towards the pandemic, including the non-users as relevant actors. Finally, this paper unpacks how the users interact with the app selecting their own practices of care beyond what the app offers.

Room N114 - Panel 038 MAKING MEDIA FUTURES. FROM MEANINGS TO IMAGINATIONS AND EXPECTATIONS

Phillip H. Roth (Käte Hamburger Kolleg: Cultures of Research, RWTH Aachen University, Germany)
Alin Olteanu (Käte Hamburger Kolleg: Cultures of Research, RWTH Aachen University, Germany)
Ana María Guzmán Olmos (Käte Hamburger Kolleg: Cultures of Research, RWTH Aachen University, Germany)

STS describe our world as constructed by a multitude of different agencies, by shared imaginations and by institutionalized forms of order and reason. "Sociotechnical imaginaries", for instance, encode collective visions of future societies to be attained and desired in specific national settings and political cultures. This panel explores, particularly from a media perspective, the scientific imaginaries of the future and how these vary according to their interrelations with diverse communities and contexts. Media play a central role in making our imaginaries of the future, by reiterating established frames of meaning production and, also, by granting access to volatile languages of power. The current heterogeneous mediascape allows for a wide panoply of possible futures. The way the extraction industry and tech giants, for example, employ science and technology to build a neo-liberal narrative of the future conflicts with the plurality of imaginaries of sustainability and social justice. Nevertheless, how the media transport concepts and narratives that lend desired and dreaded technoscientific futures meaning has been largely overlooked from an STS perspective. In early modernity, images of future societies were transported mostly in the print medium, making possible concepts like the nation-state. Kant's notion of the Enlightenment, and, consequently, his notion of the human were entangled with an emerging public sphere shaped by open debates in journals and other print media. In the 20th and 21st century, computation and the Internet diversified and expanded technological media, multiplying at unprecedented rates opportunities to shape narratives, imaginations and expectations. Computational tools enable new ways of research while also transforming ways of social life and political action. Thus, STS and their methodologies are becoming fragmented. We observe a high level of heterogeneity of concepts by which the past and the present are known and correspondingly acted upon, ranging from different understandings of citizenship and life to the environment and what it means to be human. How does the complexity of intermedial processes enable different meanings of technoscientific futures and their politics – or does this perhaps also restrict the articulation of different meanings? How do new technological media emerge and become employed for affording – which includes obscuring – possible futures? How do their intricacies translate into everyday life and governance, shaping the way society, science and technology interact?

We are interested in exploring the many facets of how politics of technoscientific futures are made and changed in between the different media languages of science, arts, politics, education etc.

Central concerns in tackling this question from various conceptual and empirical perspectives are:
- The foregrounding of language and semantics in making technoscientific futures, imaginations and expectations;
- The role of media technologies for making technoscientific futures in research cultures (paper technologies, instruments, computer code, graphs and charts etc.);
- The intermedialities of science and technology;
- Computer modelling and simulations as media that make meanings of politics of technoscientific futures;
- The role of the senses and affect in making technoscientific futures and their politics;
- The visual arts, politics and technoscientific futures;
- Histories of mediated technoscientific futures.

Session 1

630 FUTURES AS LINGUISTICALLY COMPOSED EXPECTED PRESENTS

Toni Garbe (Institut für Soziologie, Johannes Gutenberg-Universität Mainz) Marcel Woznica

Different forms of future play a crucial role in STS: Guiding visions are associated with the design and implementation of new technologies, sociotechnical imaginaries are to be attained and desired whereas visions as societal expectations might be powerful tools to significantly drive a particular development. We want to take a step back from these distinctions of futures. We ask how futures are generally produced from a theoretical perspective. In doing so, we connect to the perspective that futures are social constructions in the present (Luhmann 1976). But what happens in 'doing future' (Reckwitz 2016)? Futures share with other imaginaries (e.g. fantasy) that they are not real presents. At the same time, they differ from other imaginaries in having a specific expectation of realization. Our thesis is that both the construction of imaginaries in general and the formulation of the expectation of realization can only be done through the medium of language. Language is a special medium because it can express what does not yet exist or no longer exists. We compare the role of language with the role of artefacts and visualizations (like prototypes) in the production of futures. Prototypes alone cannot produce futures. But they can help illustrate futures. Prototypes can show what already-is. Language must complement

what is not and that this will be realized. Our considerations are the result of our research in the BMBF project „Zukunft materiell entwerfen. Prototypen als Kommunikationsmedien des Neuen“ (with Sascha Dickel). We will present our reasoning on the empirical case of Urban Air Mobility, which is an interesting case study as it oscillates between the future and the present.

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656 LIVELY MEDIA TECHNOLOGIES: ETHICS, MONSTERS AND NEW IMAGINARIES FOR THE FUTURE

Line Henriksen (Malmö University) Bo Reimer (Malmö University) Bojana Romic (Malmö University)

With this paper, we suggest a new ethical and conceptual framework for how to enter into companionships with digital technologies and digital creations in an increasingly media dominated society. We argue that such a framework is needed, as recent developments within digital technologies have sparked cultural anxieties concerning the agency and liveliness of such technologies to the extent of creating popular imaginaries of “technologies-as-monsters” (Suchman 2018). Examples of such imaginaries of monstrous technologies can be found within contemporary popular culture, but the ties between the monster and technological developments have a much longer history and have been explored within literature and art for centuries, the most notable example being Mary Shelley's novel Frankenstein: Or the Modern Prometheus (1818/2003). Using discourse and textual analysis, as well as Monster Studies and Feminist Posthumanism, we investigate the legacy of the cultural and scientific imaginary of technologies-as-monsters, and the role played by media in transporting these imaginaries (Jasanoff, 2015). We offer an analysis of contemporary science fiction narratives across media – such as TV, film and novels – and discuss how they influence imaginaries of the technologies of the future. We also propose new methods based on creative writing for rethinking and retelling stories of future co-existence and companionship with techno-monsters.

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923 CONCEPTS OF GILBERT SIMONDON APPLIED TO SOCIOTECHNICAL AND SCIENTIFIC IMAGINARIES

Bellon Jacqueline (Eberhard Karls Universität Tübingen)

With French psychologist and philosopher Gilbert Simondon a medium can be described as a milieu, that is, the surrounding environment for any entitiy we choose to analyse. From this perspective, for example, a brain can be grasped as the milieu of a thought/image, but instead of a brain we could conceptualise a person’s personality or a collective consciousness as the milieu for a thought/imagination just as well. The closeness of Gilbert Simondon’s approach to try to look at a reasearch item of interest – here, sociotechnical or scientific imaginaries – by distinguishing between a ground and a figure to System’s Theory’s distinction between ‘System’ and ‘Umwelt’ has not yet been explored into depth, but could add an original perspective on how scientific imaginaries come into being and are passed on. Adding Simondon’s idea of an evolution of technical objects and his notion of an age of information theory and linking those concepts of his to meme theory could provide an interesting take on how not only imaginaries, but also institutionalized forms of order and reason can be analysed. Furthermore, from a perspective of a history of ideas taking into account the manifold influences that technical objects and related scientific theories have on the overall scientific discourse and theory building of a certain time, scientific imagniaries can be described as existing in a milieu of a certain time’s reigning paradigm. For this, Simondon proposes several examples in his On the Mode of Existence of Technical Objects that I will refer to and put them into context with the panel’s endeavour to explore scientific imaginaries “according to their interrealtions with diverse comminities and contexts”

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Room N102 - Panel 040. HACKING EVERYTHING: THE CULTURES AND POLITICS OF HACKERS AND SOFTWARE WORKERS

Paula Bialski (University of St. Gallen)
Mace Ojala (IT University of Copenhagen)
Andreas Bischof (Technical University of Chemnitz)

Whether it's geopolitical or security hacking, big-tech's software workers leaking the injustices of their companies, or cryptocurrency geeks gaming the financial markets - people who work with our software and computers, harvest our data, or hack into our systems, are gaining political and cultural significance. This podcast panel invites all researchers who study what it is to be a hacker, computer engineer, or work with computers, software, or digital platforms, and/or what it means to hack technical, individual, state or corporate powers.

As we frame this EASST conference around the politics of technoscientific futures, this panel brings to the fore research around the actors shaping, building, maintaining, hacking, programming, processing or managing the regimes of data collection, knowledge, and control, within the computing systems we use today.

Inspired by research around hacker cultures, such as Chris Kelty's work among free software communities, Biella Coleman's work on the Debian communities (2012) and the politically-motivated hacker collective Anonymous (2014), or Stuart Geiger's embedded ethnography in Wikipedia (2017 with Halfaker) - this panel shines a light on the people who build our opaque and oftentimes contentious technical worlds. By using other modes of knowledge production, we wish to challenge the role of the STS scholar in describing the powers and agencies, and the practices and struggles of hacker or software cultures - a challenge that, in our increasingly complex, commodified technical worlds might never be fulfilled.

As an "alternative format" this panel brings it's panelists in conversations with the panel ogranizers in the form of a podcast series. Instead of traditional powerpoint presentations, panelists will be asked to present their research in the form of a 15-20 minute minute podcast programme - through dialogue with the panel organizers. While panelists will be given the usual time to speak and present their work, the podcast format as an informed conversation is aimed to create another form of engagement with research, pushing academics to discuss their work with a wider audience. With the panelist's consent, this podcast will also be published and made available after the conference is over.

Session 1

1025 HACKTIVIST (WEB) ARCHIVING: A CASE STUDY OF ARCHIVE TEAM AND ACTIVIST ARCHIVING

Jessica Ogden (University of Bristol)

This paper frames the cultural significance of "hacktivist web archiving" through an ethnographic study of Archive Team and their efforts to archive "Not Safe for Work" (NSFW) posts on the popular social media platform, Tumblr. This research first sheds light on the origins and organisation of Archive Team, a long-running site of web archiving and "loose collective" of volunteers dedicated to saving websites in danger of going offline. I outline two Archive Team "tenets of practice" that reflect and frame an approach to web archiving centred on cultural values dedicated to F/OSS, information freedom and the preservation of access. Using examples from their efforts to archive Tumblr NSFW, I examine how the entanglement of practice, participants and platform resistance ultimately shapes what was deemed worth saving (and conversely, not). I argue that web archiving is a transformative force that requires attentiveness to who is archiving, but also the cultural dimensions of practice that inform everyday decisions about how the Web is "saved" for the future. I compare and contrast Archive Team with other (increasingly high profile) community-based activist data archiving and hacktivist projects centred on data collection and preservation. In doing so, the paper contributes to broader discussions surrounding the organisational forms of hacktivism and online participatory cultures, "craftiness" and making in technoscientific practice.

260 CTRL + F_EMINIST FUTURES: HACKING ALGORITHMIC ARCHITECTURES OF CITIES TO COME

Maja-Lee Voigt (Leuphana University Lüneburg)

To this day it remains a question of power who is granted the right to visibly take up and claim urban space; both physically and virtually. A societal and literal "Room of One's Own" (Woolf 1929) is still not a given for people who define as women and/or queer. Rather, it is not only floor plans and cityscapes in which gendered bodies hardly find unconfined spaces or representation; discursive and online realms often turn out to be equally restrictive, patriarchally dominated, and misogynic. Additionally, as urban automation advances in an increasingly 'smarter' city, everyday processes are more and more controlled by privatized algorithmic architectures of oppression.

Yet feminist hackspaces resist these heteronormatively programed technologies. Following five months of ethnographic research on cyberfeminist collectives and their resistive practices in Germany and Austria in 2021, my contribution askes how digitized cities become technologically, culturally, and spatially hacked toward representing more diverse realities. My analysis shows how feminist hackspaces attempt to increase accessibility to interfaces, (digital) spaces, and decision-making processes by sharing their tech-knowledge through open source solutions, educative illustrations, and visions of otherwise urban futures. Their activism demonstrates how (urban) hacking is a crucial practice to break with non-democratically controlled digitalization processes: playing with the uncertainty, incalculable openness, and scope for design of possible futures within software spaces makes hackfeminists essential actors in imagining cities to come. Often unnoticed and underestimated, their 'trial-and-error' approach and understanding of hacking as a glitching cultural technique as well as refusal of pre-programmed patriarchal orders embodies the radical presence of potential tomorrows: a future filled with literally uncoded uncertainties and heterogenous hopes in favor of a hackable, thus accessible algorithmic anarchitecture in a cyber_feminist_city for all.

521 HACK THE HOUSE!: RECONFIGURING DOMESTICITY IN CO-LIVING SPACES

Cansu Güner (The Department of Science, Technology and Society (STS), The Technical University of Munich)

This podcast is about hacking houses. Entrepreneurs with engineering backgrounds who live in co-living spaces tend to hack their houses either as part of a hackathon or via self-initiated hacking practices. Drawing from a one-year-long ethnography on hacking practices in co-living spaces in the Bay Area and Munich, I aim to answer the following questions: what would happen if the subjects of domestic work would also be equipped with the technological know-how and expertise that would potentially reconfigure the domestic ideology? Would then they position domesticity as their domain of innovation and intervention? What kind of domestic ideal would they have? What kind of technological interventions would they make or not make?
Specifically, I would like to compare two home automation systems, namely the Weekly Task Planner (WTP) and the Hidden Camera, which had been created as a result of hacking practices in co-living spaces. In Munich, the WTP was created to help residents to keep track of predefined domestic tasks, e. g., cleaning, by automatically assigning them to people every week. In the Bay Area, one of the residents hacked the problem of dirty dishes by installing a hidden camera in the kitchen to surveil and shame the irresponsible residents who fail to fulfill their chores – not for accustomed reasons such as safety and security purposes.
Drawing on feminist STS (Schwartz-Cowan 1976; Cockburn 1997; Naulin and Jourdain, 2020; Fraiman 2017; Kleif and Faulkner, 2003; Suchmann 2007), I would like to shed light on how hackathons and hacking practices have been utilized as ways of remaking domestic culture(s). I argue that co-living as a technosocial project is subjected to the entreprenurialization of domesticity in which the domestic activities become dominated by entrepreneurial ambitions like hacking. Situational analysis, in-depth interviews, and ethnography are employed as the main methods.

Room N113 - Panel 044 MEANINGFUL HUMAN CONTROL? SOCIOTECHNICAL IMAGINATIONS OF AI, DRONE SWARMS AND THE FUTURE OF WARFARE

Jutta Weber (Paderborn University)
Katherine F. Chandler (Georgetown University)
Christoph Ernst (University of Bonn)

Sociotechnical imaginations of our social order as well as of our everyday life are inscribed in the design of technological projects and artefacts - not only on the individual but also the sociocultural level. Imaginaries of today's AI as a decision-making entity is not only part of the Hollywood science fiction narrative, but is partly driving contemporary military discourses and practices that build i.a. on biomimetic concepts of emergent and adaptive behaviour. For example, drone swarms are imagined as distributed brains that can solve complex problems. At the same time, defence officials deflect urgent questions of arms control, referring to these imaginaries as the product of a Skynet/Terminator-style fantasy.

In our panel we want to analyse sociotechnical imaginaries of AI and how they influence the development of autonomous weapon systems on the technological, political and military level. We also ask for alternative imaginaries to make the consequences of lethal autonomous weapon systems more visible.

Session 1

520 THE ORIGIN OF ALL FEARS : FROM IMAGINED AIR THREATS TO WORLD WARS REALITIES IN EARLY FRENCH SCIENCE-FICTION

Zacharie Boubli (Conservatoire National des Arts et Métiers (CNAM) - France)

This contribution addresses imagined future warfare with a data-oriented historical perspective, focused on the productions of early French science-fiction. How did the first portrayals of drones and aerial warfare relate to the reality of air wars underwent by France, and how did this imagined future shape its ulterior realization?
France has consistently been among the most air-minded nations of the world since the 1790s, pioneering most flying devices for entertainment and militaristic uses. Futuristic authors and air pioneers both spurred improvements as the 1870 Paris Siege made aircrafts the weapon of the future in the public eye.
This vision was instrumental in the development of both air warfare concepts and military planes, despite WWI planes performing far below envisioned possibilities. Less foreseen was the battlefield's extension onto the skies with the apparition of fighter planes.
As reality caught up with science-fiction, Interwar authors pushed their imagination further to conceive new air threats, with two figures standing out.
The first one is the pilotless robot-plane following remote or pre-programmed instructions. This speculative object was not scary by itself: the fearsome element was its imagined operator, always human (evil individual or hostile collective). AIs were not yet central, but we can identify the robot-plane as an imaginary ancestor to both drones and missiles.
The second central figure is chemical bombers, derived from the traumas of WWI. New weapons combined with the development of bigger airplanes fed the image of a chemical apocalypse rained on cities, exterminating all life.
WW2 and its new air doctrines then materialized most pre-WWI fears of urban destruction and air-land attacks, and the first use of missiles. Yet, the aerochemical fear didn't come true, probably by fear of identical retaliation. Its (unforeseen) equivalent would be the atomic bomb, which was used precisely because only one party possessed it.

471 "COWBOY IN THE SKY": THE FIREBEE ON THE SETTLER COLONIAL FRONTIER

Ivan Chaar Lopez (University of Texas at Austin)

This historical paper wrestles with the meanings and relations performed by drone operations on the borderlands in the mid-twentieth century. At its core is an analysis of the stories the U.S. military and aviation industry told in films, photography, and promotional materials. These stories described the roles drones, human pilots, airplanes, and other weaponry performed in experimental exercises on the southwest. Often relying on settler colonial frontier tropes and scenes, the paper argues drones are racialized delegates that prescribe human behavior within spatial relationships. These scenes rehearse and govern how foreign, "intruder" entities should be engaged. The paper traces and interprets technoscientific scenes through the frameworks of human-machine configurations (Suchman), and of settler colonial and racial politics (Chun; Day; Omi and Winant; Wolfe). It contributes to existing understandings of drones as tightly bound to settler colonial and imperial logics of differentiation that organize whose lives are protected and whose ought to be eliminated.

316 DRONE SWARMING AND THE MULTI-SENSORIAL BATTLEFIELD

Andreas Immanuel Graae (Royal Danish Defence College)

As recent conflicts in Libya and Nagorno-Karabakh have shown, drone swarms have the potential to disrupt conventional warfare as we know it. Developments in this area are strong and operational potentials of swarming are and will soon be available to both state and non-state actors. But what exactly defines a drone swarm? And how can or will it disrupt strategic cultures and anthropocentric ideas of centralised command and control? This paper investigates these questions by using a combination of military and popular culture as a prism for understanding how robotic swarming entails new modes of sensory operation. The paper argues that these new sensory modes not only blur the lines between human and machinic control – and hence between natural and prosthetic sensoria – but even transcend beyond what the human sensory apparatus can possibly process and comprehend. Based on examples and analytical insights from the Netflix series Black Mirror - more specifically the depiction of robotic bees in the episode “Hated by the Nation” (2016) - the paper analyses how artificial intelligence and robotic swarms can disrupt, but also expand or refine, the sensory capacity of human perception. Examining how these multi-sensorial modes of drone swarming upset basic sensory categories such as seeing and hearing, the paper thus contributes to the ongoing discussions in STS studies of the strategic, ethical and legal questions that lethal autonomous weapon systems give rise to by adding a sensory approach on the sociotechnical drone imaginary and the imagination of machine autonomy.

285 OUT OF 'HUMAN CONTROL:' RE-THINKING AI ETHICS THROUGH DYSTOPIA

Katherine Chandler (Georgetown University)

Human control is a central theme in policy debates about artificial intelligence (e.g. GGE-LAWS). Ethical principles developed in 2019 by the European Union foreground the significance of human agency and oversight, while guidelines established in 2020 by the Korean government, for example, call for a “people-centered” artificial intelligence. The US Department of Defense acknowledges humans must be responsible for actions taken by artificial intelligence. Yet, what does human control mean? This paper turns to the British-American science fiction series, Black Mirror, the South Korean science fiction series, SF8, and the Latinx film, Sleep Dealer, to examine vulnerabilities that emerge between humans and sentient machines. Its analytic problematizes the ideal of control altogether and considers the ethics that can be found in weaknesses, liabilities, and failures that connect persons and technologies.

The three works studied in this paper are typically taken as explorations of dystopian futures that might arise through artificial intelligence and autonomous systems. Rather than enable human control or promote human dignity, machines reproduce and exacerbate divisions among persons and limit human action. Read in this way, Black Mirror, SF8, and Sleep Dealer are cautionary tales about the consequences of ceding control to machines and the potential for mechanical errors. Yet, a closer look reveals that the pieces are not just about the limits of technology but of humans, as well. Artificial intelligence and autonomous systems are never separate from humans; it is hard to know where machine stops and human begins as workers labor through tele-robots at the US-Mexico border in Sleep Dealer, simulation and reality are entangled in Black Mirror, and both persons and robots are shown to be out of control in SF8. These relations are shaped not by mastery, but by the potential for shared connections, pain and death. Human and machine alike are flawed.

Room N110 - Panel 049 THEORISING INTERFACES / INTERFACE THEORIES

Benjamin Lipp (Cornell University)
Paula Helm (University of Tubingen)
Athanasios Karafillidis (RWTH Aachen University) Roser Pujadas (London School of Economics and Political Science)

Human interconnectedness with technology has come to be increasingly shaped and constructed in terms of interfaces between technical components, humans, and specific environments. Knowledge about such interfaces is predominantly shaped by disciplines that understand interfaces almost exclusively in technical terms. Information science and engineering designs software interfaces as technical boundaries and points of information exchange between various components of a given technical system. Human-Computer Interaction investigates user interfaces and how they afford certain activities by users rendering technical systems more or less accessible for those users. More recently, fields like bio-medical or neural engineering have started to build ever more intimate and invasive brain-computer interfaces between technology and human bodies. While interfaces are at times discussed with regard to social, political, and ethical issues, our imagination of the interface has remained predominantly techno-centric, for example, as screens or prostheses.

In relation to these emerging materialities and discourses of the interface, we propose to explore ways of theorising interfaces beyond its techno-centric meaning aiming to capture the breadth of social and decidedly political components comprised in interface design and use. In doing so we ask for the analytical potential and limit of possible interface theories in STS. We want to test the very notion of the interface as a theoretical tool to account for new forms of human-machine relations, digital entanglements, and techno-scientific governance. For this, we can rely on existing studies on interfaces, e.g., user interfaces (Cirucci 2017, Halpern 2015, Suchman 2007), software interfaces (Pujadas & Venters forthcoming, Pujadas et al. 2020), or brain-computer interfaces (Mauldin 2013). In addition, we can make use of existing attempts of re-thinking the very notion of the interface as methodology (Marres, Gerlitz 2015), relation (Hookway 2014), effect (Galloway 2012) or process (Lipp forthcoming, Karafillidis 2018).

We welcome contributions that critically reflect or build on these discussions as well as contributions that propose new avenues for theorising interfaces. We invite scholars to

* investigate different designs of interfaces and practices of interfacing
* develop new or expand and question existing conceptualisations of the interface, going beyond a techno-centric understanding
* reflect on the methodological potentials and limits of the interface as analytical trope to investigate Technoscience
* provide genealogical or comparative accounts of “the interface” in different fields (e.g. computer science, cybernetics, physics)
* explore the interface as an arena for political contestation and techno-scientific imagination where responsibilities are assigned, negotiated and shifted

Session 1

323 CONNECTING BODIES AND URBAN DATA. ALL WE DO IS INTERFACING?

Fischer Johanna (Hafen City Universität) Annika Kühn (Hafen City Universität)

The CSL Showroom is a room full of touchscreens, beamers, TV screens, VR goggles and tangible user interfaces. Researchers and participants work together on table-sized touchscreens, marking patterns on a map. A participant's child plays with Lego bricks and 3D-printed controls from a tangible user interface. In our Lab space we bring together stakeholders from various areas, debating wishes, limitations and goals iteratively in order to develop data-based urban planning tools.
Organizing cooperative research with multiple stakeholders includes managing the accessibility of various interfaces. This notion not only captures technical infrastructures but also spatial settings, the affective forces we sense, the air we breathe, the proximity of bodies we interact with. Interfacing means processing the sensual, technical and regulatory alike. However, a lot of these interfaces are difficult to grasp and often develop their very own movements. Besides the ephemerality of air and atmospheres, also technical interfaces need to be flexible to release users from static positions and open up for a more collaborative workflow. Organizing those interfaces often resembles a tentative way of dis/organizing and poses a major challenge to managing transformative approaches. To further develop our ideas of interfacing processes, we propose a paper which brings together our findings from three urban planning projects (PAKOMM, CoSI, DIPAS, SRL) with conceptual thoughts on interfaces (e.g. Galloway 2012; Hookway 2014) and dis/organization (e.g. Knox et al. 2015; Conrad et al. 2021). We aim to gain insights into interfacing effects, specifically the risks and advantages of their dis/organization and how this knowledge can be built into dynamic situations. In addition, we want to explore the potential of the concept of dis/organization within a theoretical discourse around interfaces, their effects and their management.

420 INTERFACING RELATIONS: BODIES, MACHINES, AND HOMES IN EXPERIMENTAL NEUROPROSTHETICS

Alexandra Middleton (Lund University)

Neuromusculoskeletal prostheses, developed in ongoing clinical trials run by a laboratory in Sweden, are emerging at the frontier of embodied human-machine interfaces—integrated with bone, with electrodes implanted on muscles and wrapped around nerves. In what its inventors call a "bidirectional interface" facilitated by algorithmic pattern recognition, users control these prostheses with intuitive thought and perceive sensory feedback (touch) in interaction with their surroundings. These trials also constitute the first cases in the world in which such intimately integrated prostheses are taken out of the lab and used freely by people at home, all while still being studied and developed.
In this paper, I examine how the "bidirectional interface" between body and machine opens up to a third system, a social-relational world, by the trials' decision to study these prostheses in peoples' daily lives. I draw upon two years of ethnographic fieldwork moving with trial subjects and their prostheses recursively among laboratory, clinical, and home sites throughout Sweden. In this experimental milieu, the home emerges as a key site of science-in-the-making, with its own environs, sensory and relational intensities that interact (and interfere) with the human-machine interface. This configuration destabilizes narratives of Cyborgian hybridity and a prosthetic imaginary that narrows its focus to the human-machine dyad, requiring an expanded notion of interfaces-plural that incorporates relationality at its bedrock. I argue for an ecological approach to interfacing that accounts for the practices—and breakdowns—that produce, maintain and challenge these relations, occurring largely in homes outside the formal sites of the trials. In doing so, I attend to instances of breakdown not as aberrations but as generative and constitutive to human-machine relations. If breakdowns make infrastructures visible, breakdowns also make interfaces visible in new ways, illuminating the ongoing work of care that goes in to humans and machines living with/among/against each other.

269 ON LUNGS AND TUBES. A THEORY OF AERIAL INTERFACES.

Dominik Maeder, University of Bonn

Following the paradigm of Human-Computer-Interaction, interface theories have implicitly taken upon the model of computer screen to conceive of interfaces. Two major assumptions are baked into this HCI-derived notion of the interface: techno- and surface-centrism. Drawing upon Hookway's (2014) genealogy of the concept of interfaces in fluid dynamics and Melody Jue's (2020) proposal of volumetric underwater interfaces, I will delineate a theory of interfaces that moves beyond techno- and surface-centrism by focusing on aerial interfaces, i.e. interfaces of and within air.
This requires a shift in perspective on interfaces in two ways: First, we need to think of interfaces not as external objects, but as internal thresholds, which permeate elemental (physical, biological, and chemical) reality. Secondly, moving beyond a two-dimensional conception of interfaces necessitates taking into account unique properties of volumes, such as pressure and saturation (cf. Jue & Ruiz 2021) as characteristics of interfaces.
I will outline a theory of aerial interfaces by providing thick descriptions of the lung and the ECMO machine as its technical substitute (which has become all too familiar over the course of the COVID19-pandemic), and of the pitot tube – a small, yet indispensable aviation device to measure air flow and derive air speed as a result of pressure differences. With the lung as an intracorporeal interface between air and blood and the pitot tube as an interface within air, we may conceive of aerial interfaces as critical, volumetric thresholds for natural and technological processes, thereby significantly expanding the concepts of interface theory.

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526 INTERFACING KNOWLEDGE – ABOUT FORMALISATION, DESIGN METHODS AND OTHER RELATIONS

Benjamin Doubali, Johannes Gutenberg University Mainz (JGU Mainz)

In a society where the digital interface increasingly acts as the main pivot of communication and culture, interfacing practices become a focus of interest for STS (Lipp/Dickel 2022). I argue that for such activities the entanglements with knowledge repertoires play a vital role and pose recurring problems in cultural contexts (gaming,…) or working environments (manufacturing,…).
To illustrate this, I address practices that build upon knowledge of, about and through interfacing. These relational modes of knowledge differ in the extent to which knowledge is made explicit. Knowledge of interfacing hints at technical elements like standardized procedures which guide and synchronize the activities of building and stabilizing socio-technical arrangements. Seemingly exclusively explicit, it is available in reports and other formalised formats. Knowledge about interfacing also occurs in such formats but draws beyond that on tacit knowledge applied by designers to use and refine methods and principles when rendering machines, algorithms,

and human users available for each other. Finally, knowledge through interfacing involves said users and describes socially organized patterns of incorporation and re-interpretation of relational and processional capacities of interfaces.
This exploration joins theoretical questions about (1) degrees of explicity of knowledge and (2) practices of interconnecting and separating interfaced entities. I aim to discuss models of tacit and explicit knowledge (Collins 2013) to expand theoretical concepts of the interface, underlining relational and processual approaches. Thus, I offer a renewed perspective of the interplay between knowledge and technology through a “lens of interfacing”. At this I rely on preparations and findings from the upcoming research project “IN-KNOW” which evolves around the development of a knowledge management application for industrial work in cooperation with development partners from the field.

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542 RECONFIGURING THE AFFECTIVE INTERFACE – A FEMINIST APPROACH.

Pat Treusch, Trinity College Dublin

Since more than two decades, Rosalind Picard’s work on affective computing (1997) serves as the cornerstone for conceptualizing and designing the interface between humans and machines, including digital screens as much as robotic artefacts. Affects are regarded as the prime enabler for building socially meaningful relations between humans and their machines – and thus for the human-machine interface.
This proposal revisits the affective interface from a perspective intersecting feminist STS, affect studies and critical digital humanities. It will problematize the scientific foundations underlying the paradigm of affective computing. This includes notions of the emotional human, the humanlike machine and emotions as the prime enabler of the interface. It critically engages with the normation of embodying human/humanlike emotions through contemporary AI tech.
Lucy Suchman’s (2007) insights into the ways in which affects in computing have been reduced to “another component […] needed for effective rationality” (233) are vital for this. Such an exploitative approach towards emotions does not only reduce them to a datafiable resource for replicating ‘human reasoning’, but also instrumentalizes them to evoke certain behaviors like empathy towards the machine (Turkle [1984] 2005).
Work assembled under the “affective turn” (Clough/Halley 2007; Gregg/Seigworth 2010) define affects as “bodily capacities to affect and be affected: the capacity to act, to engage, to connect.” (Clough 2018, 71). This underlines the human and non-human entangled and indeterminate nature of affects. They cannot be captured in the form of standardized data, used to model relations of humanlikeness. How to explore less normative ways of relating affectively at the interface? I will deliver an alternative understanding of the affective interface while this will necessarily include delivering impulses for a reconfiguration of the affective interface, that is, its design, its development and its implementation.

909 INTERFACING BEHAVIOUR IN DIGITAL ECONOMIES

Elif Buse Doyuran (University of Edinburgh)

How do we make economic decisions online? What is the role of the interface and its design? How is the interface constructed – discursively and materially – as having agency and power over economic decision-making? How does the interface resist, subvert, transform - à la Latour (2005) - the attempts of its designers to bring it into line with their models?
This paper presents findings from an economic sociology study of behavioural design in digital economies, a case conveniently placed to explore these questions. Behavioural design is the contemporary blend of behavioural economics theories with computing techniques variously mobilised to create persuasive communications, interfaces or “habit-forming products” (Eyal 2013). With roots in Sunstein and Thaler (2008)’s nudge theory yet having assembled varied sets of knowledge, practices, materialities under its name, behavioural design intervenes in the construction and optimisation of ever more interfaces in digital markets, to the extent that it “is replacing user experience design as the driver for the way we interface with our devices” (Dow Schull 2017 in https://www.cbc.ca/radio/spark/356-can-you-please-unlock-your-phone-sir-1.4110179/nudge-nudge-wink-wink-the-science-of-behavioural-design-1.4110205).
To explore how, and where, in the interface, behavioural ideas are inscribed to create socio-technical niches in which behavioural economics works, the paper draws on in-depth interviews with designers, developers and managers, as well as ethnographic data from trade conferences and conversations on LinkedIn and Slack. Although I and my interlocutors mainly refer to the interface in the techno-centric understanding of the term, the case speaks well to theorising interfacing as process (Lipp and Dickel 2022) between science and observed realities. I argue that the particular ways in which behavioural design makes the object (economic behaviour) available to its scientific modelling and vice versa, forces us to think beyond the performativity thesis to capture the breadth of communication, interaction and intervention (Marres et al 2018) that occur in between.

Room N111 - Panel 059 ARTIFICIAL INTELLIGENCE CONTROVERSIES

Session 2

406 'YOU CANNOT MAKE THE ALGORITHM DO SOMETHING IT DOES NOT WANT TO DO' – EXPLORING THE AGENCY AND POWER OF AI SYSTEMS IN PRACTICE

Anna Schjøtt Hansen (University of Amsterdam) Andreas Birkbak (Aalborg University, CPH)

Will AI change society as we know it? Popular accounts paint a picture of AI as inherently powerful, transformative, and inscrutable – sustaining a rather mythical and seductive story of AI. To challenge such panoramas, we offer a situated case study of an AI system in the making where we through several 'ethnographic episodes' (re)explore the agency and power of AI. The case study is based on nearly two years of ethnographic enquiry into the development process of a machine learning-based recommender system in a large regional media organisation in Denmark.
STS scholars have already begun to demystify the workings of AI, highlighting the fragility of such systems by showing how they depend on heterogeneous others to act in the first place. However, such decentring moves come with the risk of turning away from the AI's role as an actor. We place emphasis on this, as we describe how data scientists, managers, and editors attempt to negotiate and collaborate with the AI system and how it turns out to be a rather difficult collaborator: An unwilling, stubborn and sometimes even incompetent actor. Due to its inability or unwillingness to negotiate, the AI system induces the need for its surroundings to adapt to it. It seems that the transformative power of AI is not necessarily a result of these systems being inherently powerful or highly advanced. It can also be their quite clumsy and simple-minded nature that provokes a range of transformations in the contexts they enter. Approaching AI systems as awkward and stubborn actors, we find, offers a more interesting way of thinking about their influence on society than the story of AI as inherently advanced and powerful.

286 DIGITIZING THE DANES: TRACING THE HISTORY OF THE DANISH E-IDENTIFICATION SYSTEM

Torben Elgaard Jensen (TANTlab, Aalborg University)

According to EU surveys, Denmark is a frontrunner in the digital transformation of society measured on parameters such as connectivity, digital public administration, digital busines and digital competences. The Danes are thus generating vast amounts of data about themselves, which, for better and for worse, might be used by government and others. If the spectre of machine learning were to find a hospitable place to rummage, Denmark is not a bad guess.
To situate and contextualize the Danes' contemporary machine learning readiness (critics would say vulnerability), this paper traces the three-decade long history of the Danish e-ID system, that is the system by which Danes prove their identity online. The paper traces the alliances, technologies, and key ideas related to three generations of the Danish e-identification: First, from the 1990's, the rather complicated and unevenly adopted digital signature developed by the Ministry of Science. Second, from 2010, the far more widely adopted NemID developed by the Digitalization Agency together with the Danish banks. Third, the successor to NemID - the MitID system - which is currently in process of being implemented as the new mandatory system for all citizens. The MitID was also developed in a public-private partnership that includes the major Danish banks.
The account of the e-ID history is based on interviews with leading civil servants and bank sector representatives, publicly available reports, as well as specific documents released by the Danish Digitalization Agency on our request.
The account attempts to show the gradual establishment of a critical national infrastructure – arguably an 'elementary particle' of the digitized Danish society. The story of the consecutive versions of Danish e-ID offers a historical and situated explanation for the current configuration of e-ID while also indicating that it could have been otherwise.

168 ANALYSING CRITIQUES AND CONTROVERSIES OF AI AND THEIR PARTICIPATORY POTENTIAL

Mercedes Bunz (King's College London)

Using research for a forthcoming publication with Claudia Aradau and inspired by the work of Cohen et al 2020, this contribution will analyse public critiques and controversies of AI with the aim to understand their participatory potential. While acknowledging the many different critiques of AI, it will focus on four controversies reading them as 'social text':
1) AI overruling human agency leading to future catastrophes: this critique, linked to the concept of 'Artificial general intelligence' and autonomous weapons, is driven by ethical concerns about the human loss of control.
2) Bias in AI causing injustice and dehumanisation: this critique points to the bias, with which machine learning systems operate, further fortified by unbalanced training data or insufficient model testing reflecting historical or social inequities.
3) Adoption of facial recognition by public services and corporations: this critique targets the unreliability of facial recognition technologies as well as the effect it has on the public sphere.

4) Labour issues in the production of AI technologies: this critique targets the exploitation of workers labelling data in the Global South.
Based on a qualitative analysis into the political and ethical concerns expressed in these debates (news items and social media posts informed by a mixture of STS/sociology and other studies plus machine learning publications), the analysis will look at:
a) how the argument of each public critique is built and thereby positions and frames AI
b) who is invited to intervene into the development of AI by that critique, and what participatory potential is opened through that critique
c) what outcome the critique aims for (governmental regulation, technical optimisation, different forms of production).
The analysis, which contributes to controversy studies, can be seen as preparatory work to inquire productive ways of staging the collaboration and negotiation between machine learning developers and future users.

204 TESTS, PROTESTS AND CONTESTS: HOW HUMANS AND AI MATERIALISED 'ALGORITHM TROUBLE' IN TWITTER'S IMAGE-CROPPING CONTROVERSY

Tommy Shane (King's College London)

As AI mediates more interactions, decisions and experiences in public life, identifying methods of democratic participation is ever more urgent. In September 2020, Twitter users presented a response to this problem: they showed that Twitter's image cropping algorithm often cropped out black faces, leading to accusations of racism and the abandonment of the AI model. What can this controversy tell us about material participation (Marres, 2012), algorithmic governance, and counter-conduct in contemporary digital society?
In the first sustained examination of the controversy, this paper explores how humans and AI interacted to materialize 'algorithm trouble' (Meuiner, Gray and Ricci, 2021): moments of failure and friction that provoke new perspectives on what it means to live with algorithms. Specifically, it shows how users materialized trouble with the vernacular method of 'tests': public performances of experiments on the algorithm that provided a format (de Mourat, Ricci, Latour, 2020) for participation. I explore two "grammars of participation" (Kilty, 2017) at play: i) protests, in the form of users' unstable, decentralized, and disruptive tests in which humans and AI unpredictably and generativity interacted to spark the controversy; and ii) contests, present in Twitter's response with a centralized and highly regulated test conducted via a 'bug bounty' competition.
Building on recent literature on the sociology of tests (Marres and Stark 2020), an object of this paper is thus to reflect on how humans and AI interact to materialize 'algorithm trouble'. By contrasting Haraway (2016) and Ahmed's (2015) distinct takes on 'trouble', this paper suggests that tests may provide a paradigm for human-AI interaction that can destabilize modes of online governance from below.

Room N116 - Panel 070 HAS CRISIS RUN OUT OF STEAM?: EXAMINING THE AFFECTIVE, TEMPORAL AND AESTHETICS FEATURES OF CRISIS TALK

Alexandra Ciocanel (University of Manchester, University of Bucharest)
Roosa Rytkoenen (University of Manchester)

Diseases, finance, wars, and the environment have generated in contemporary societies a proliferation of crisis talk. Crisis has become the main interpretative frame of social changes even if historically the past might have witnessed more violent manifestations of these phenomena. Rather than seeing crisis as an isolated period of time, some scholars have proposed to examine crisis as a context, recognizing that in many places of the world the experience of crisis is endemic rather than episodic (e.g. Vigh 2008). Other scholars have questioned the transformative effects of moments of crises pointing to their conservative effect through seeking to stabilise existing structures in a contingent flow of events. Such a proliferation might make crisis an "analytically crippled term" (Bryant, 2016) and with Janet Roitman (2014) one could argue for an anti-crisis approach. Hence, the need to critically examine crisis talk as an affect-generating idiom with a specific aesthetic and with broad implications on the experience of present and the future. In this panel, we wish to examine what such chronization of crisis talk implies for the way people evaluate various kinds of macro-crises, whether environmental, political or economic. We invite paper proposals addressing questions such as:

How do people contest the various discourses of crises, especially those that are claimed to be "global", and might conflict with their lived experiences and feelings of urgency?
How do people evaluate claims of crisis in a sensationalist media environment, drawing from their own experiences?
What do experiences of chronic crises imply to efforts to mobilize action? When there seems to be too much "crisis" or a crisis saturation?
How is authoritative epistemic and moral guidance represented in crisis talk and how people navigate between different knowledge claims?
What are the temporal dimensions made more salient in crisis talk and how various imaginations of the future become persuasive?
What type of communicative styles are used in crisis talk and with what effects?

Session 1

449 MAKING SENSE OF "A GLOBAL CRISIS": SCIENTISTS AS MODERATE EXPERTS AND THE BOUNDARIES BETWEEN CONSPIRATORIAL AND CRITICAL THINKING

Roosa Rytkönen (University of Manchester)

In the spring 2020, the journal Social Anthropology (Soto Bermant & Ssorin-Chaikov 2020) gathered first reactions of anthropologists around the world to the onset of the Covid-19 pandemic. Contributors used phrases such as "deadly pandemic" (Testa 2020), "disaster" (Kelman 2020), "crises" (Kaptan 2020, Salazar 2020), "state of emergency" (Trnka 2020) and "extraordinary" (Rosengarten 2020) to address the situation. However, beyond discussions of socio-economic factors, among those early reactions there was little recognition of – or reflection on – why the pandemic might not be understood along those terms. At the time, I was on fieldwork among a group of natural scientists in Western Siberia and my paper addresses my interlocutors' reactions to the onset of the pandemic. Many of them were skeptical about the seriousness of the virus and made references to economic and political interests to explain what they perceived to be a disproportionate reaction to the pandemic. While similar references to hidden workings of power are often branded as characteristic of "conspiratorial thinking" (Bornstein 2019, West & Sanders 2003), my paper argues that among my interlocutors such reservations relating to Covid-19 were rather a manifestation of their commitment to certain ideas of truth and identity as scientists. I show how the scientists positioned themselves as moderate experts equipped with the critical capacities to interrogate truth claims in contrast to the general populace, who were seen as unable to evaluate the information spread in sensationalist media. Finally, the paper draws parallels to my interlocutors' reactions to climate change to suggest a general disposition of suspicion towards claims of global crisis.

796 COVID-19 AS A SLOW DISASTER: AN STS PERSPECTIVE AS AN INTERVENTION IN THE MANAGEMENT OF THE PANDEMIC.

Israel Rodríguez-Giralt (Universitat Oberta de Catalunya)

This talk aims to "think with" the intense adventure in which I was involved during the first year of the pandemic. It tells the story of a multidisciplinary Technical Support Group (TSG) created by the Catalan government. This particular task force was aimed to contribute to epidemiological surveillance issues, health prevention and preparedness, working at the healthcare and community level or adding risk communication and citizen involvement. For some months, this multidisciplinary team of 8 people worked intensively to develop ideas, technical documents and tools for risk communication, protocols, indicators, alert plans, social support strategies for isolation and quarantine.

In particular, I want to focus on our (unsuccessful) efforts to slow down the pandemic and unsettle the idea that we were living a “health emergency”. I’d like to show how we mobilized a notion such as “slow disaster” as (1) a boundary concept through which we held conversations, dialogues and facilitated some joint problem-making between “experts”. (2) The notion became also an interesting, and still intriguing, way of negotiating my own expertise, as an STS researcher, to intervene in the conceptual and practical articulation of the pandemic. But most importantly, (3) the notion helped us to challenge the frame of a “health emergency”, paying attention not only to the most acute, biological and clinical dimensions of “the crisis” but also to slower and more gradual impacts of the contagion, particularly in terms of long covid, social inequality or mental health.
Finally, I’d like to reflect upon the complex web of interests, institutions, economic pressures, narratives and forms of expertise that made it impossible (and “unrealistic”) to frame and define this crisis otherwise. What can we learn, as STS scholars, from this experience?

506 THE AFFECTS OF A CRISIS: OPTIMISM AGAINST PESSIMISM IN CLIMATE CHANGE DEBATES

Alexandra Ciocanel (University of Bucharest and University of Manchester)

This paper examines the dominant affects at play in the climate change crisis and their future orientation. On the one hand, scientific models of climate change usually present a doomed future and inspire apocalyptic scenarios in popular culture and among climate activists. Media such as Oreskes and Conway’s 2014 book The Collapse of Western Civilization describe a dystopic future caused by rising temperatures and sea levels and consequent social displacements and annihilations. On the other hand, climate change sceptics label their opponents as warmists, alarmists, doomsayers and critique their position as exaggeratedly catastrophic by insisting that “everything goes from bad to worse”. Many climate sceptics have taken issues to the apocalyptic future scenarios imagined by environmental activists accusing them of distorting science and also reminding them that humans can not only destroy but also save nature, the renewed British climate change sceptic, Matt Radley, for example, labelling himself as “the rational optimist”. STS studies of techno-optimism have pointed to how public debates on science and technology reveal a sociotechnical imaginary in which feelings of excitement, disappointment, and anxiety play an important role. Drawing on such insights, this paper analyzes the sociotechnical imaginaries at play in climate change debates as having optimism and pessimism as the central rhetorical tropes and affective states. It argues that the struggle to elevate some imagined futures above others points to different visions of the role of science and technology and how life ought to be lived.

657 CRISIS TALK AT THE BORDER OF SCIENCE AND POLICY: A READING OF RESEARCH POLICY AND SOCIO-ENVIRONMENTAL DISCOURSES

Rita Giuffridi (CNR-IREA) Christian Colella (CNR-IREA) Alice Benessia (Pianpicollo Selvatico) Laura Colucci-Gray (University of Edinburgh) Alba L'Astorina (CNR-IREA)

The frame of ‘urgency” represented a distinctive feature of European discourses on research policy during the first decade of the Millennium, and more broadly until the adoption of Horizon2020, the 2014-2020 Framework Programme. Crisis talk, though deeply rooted in the specificity of the European integration history, doesn’t represent an exception in contemporary discourses. Projecting gloomy future scenarios is a rhetorical strategy employed both by political elites and sometimes by mainstream environmental movements. Yet, framing environmental problems only as ‘crises’ or ‘emergencies’ reveals the limitation of neoliberal governamentability and its capacity to bring actual systemic changes. This presentation discusses the epistemic and political dimensions of ‘crisis talk’ in the context of the European research agenda, and how such approach influences the visions of scientific issues at national and local levels. We will focus on the socio-cultural and scientific framing of two agricultural socio-environmental problems: the outbreak of the plant pathogen Xylella fastidiosa in Europe and the issue of soil fertility degradation, as explored by the project involving the authors, BRIDGES . We will show how the urgency frame affects the descriptions of the problems at stake, the choice of their salient features, the actors deemed able to provide useful knowledge and those included in (and consequently, those excluded from) the construction of viable paths to solutions. We will highlight how framing the debate according to a narrative of urgency unavoidably reduces the spaces and opportunity for a robust problem setting including a broader set of social actors, values and forms of knowledge. We will also discuss some preliminary readings of how science policy discourses at the European level, and in particular the ‘crisis talks’, are currently being transformed by the communitarian policy evolution, e.g. by the Green Deal drive.

Room N117 - Panel 080 ASSETIZATION: GOVERNING TECHNO-ECONOMIC FUTURES

Kean Birch (York University)
Jane Bjørn Vedel (Copenhagen Business School)
John Gardner (Monash University)

Techno-economic futures are increasingly defined by the transformation of different things into assets – that is, by assetization. As a process, assetization entails not just the transformation of things into a techno-economic object (i.e. asset), it also shapes the governance of our futures through the construction of future expectations (e.g. revenues) and the practices that bring those expectations into the present (e.g. discounting). The purpose of the panel is to push assetization studies further by considering the governance dimensions of the process. There are many possible analytical and empirical avenues and questions to explore here: What techno-economic practices underpin assetization and how do these (re)configure the governance of science, technology, and innovation? How do different epistemologies manifest as different governance forms in assetization? How do public and private logics and governance mechanisms produce specific forms of social and economic value? What sorts of alternatives and political possibilities can be opened up through an examination of asset governance? Overall, we are open to papers that examine diverse processes of assetization and the implications of assetization for the governance of future technoscience.

Session 1

472 VALUE ENGINEERING: (IN)COMMENSURABILITY IN PRACTICES OF ECOLOGICAL AND ECONOMIC VALUATION IN SUSTAINABLE DEVELOPMENT

Christo Sims (University of California, San Diego)

The dominant multinationals in Silicon Valley are attempting to justify their outsize influence over the governance of techno-economic futures in part by claiming unrivaled commitments to ‘sustainability.’ One way they are attempting to do so is by hiring prominent architects to design eye-catching and ostensibly green new corporate campuses in and far beyond Silicon Valley. These projects simultaneously bolster corporations’ claims to be at the forefront of an emergent and more moral form of capitalist development while also investing an ever-larger portion of their firms' accumulated capital into a particularly old-fashioned asset class: that of real-estate. In this talk, I discuss how experts who work on contemporary sustainable development projects for large corporations translate between ecological and economic modes of valuation at different stages of the design process. Some of these valuation practices are derived from romantic traditions that bring together moralized figurations of human-nature relations with charismatic performances of expertise. Others use modes of valuation derived from scientism and economism to calculate supposedly objective measures of future ecological-economic value. I argue that the design process often works as a commensuration machine for translating between these different modes of valuation: moral and emotional valuations of nature are converted into quantities that can be used in established modes for valuing real-estate assets. However, I also draw attention to what is distorted and erased in these processes of commensuration, and I caution against the tendency of government agencies to accept the sustainability claims being made by Silicon Valley firms and their high-profile architects. To make the argument, the talk draws on interviews with architects who specialize in sustainable design as well as a case study of Google’s new corporate campuses in Silicon Valley, which were designed by the firms of European ‘starchitects’ Bjarke Ingels and Thomas Heatherwick.

177 ASSETIZING BLOOD: ANTICIPATED TECHNO-ECONOMIC FUTURES THAT SHIFT BIOMEDICINE FROM GIFT, TO COMMODITY, TO RENT

Neil Stephens (University of Birmingham)

Healthcare systems around the world rely upon blood donation to support a variety of medical procedures, to help address disease and injury. This given, the supply of sufficiently high-quality blood poses logistical challenges for those involved. One proposed solution is the development of a diversity of ‘cultured blood’ products, which use bioreactor systems to grow human blood cells under controlled conditions, with ongoing work producing both red cells and platelets. I analyse the topography of this emergent technology by drawing upon interviews conducted with researchers leading the companies and university labs developing this work. Through this, I will explore the potential assetization of human blood, as specifically configured networks of human cells, anticipated market conditions, and bioreactor technology, are positioned to leverage sustained value from the supply of cultured blood and the systems that support it. Consideration will be given to potential governance and social provision issues for blood as a form of biomedicine that could be shifting between ‘gift’ (Titmus 1970), to ‘commodity’ (Waldby and Mitchell 2006), and to asset (Birch and Muniesa 2020). As such, we can ask how imaginaries of civic obligations and governance may be reconfigured if these techno-economic futures come into being.

986 ASSETIZATION OF SOCIAL RELATIONS IN THE ECOSYSTEM GOVERNANCE MODE

Jonna Antonia Josties (Humboldt-Universität zu Berlin)

Supposing that the ecosystem is a mode of governance to create and deliver new forms of private assetization in the social realm, how does it work? I argue in this paper that the operation of the ecosystem metaphor as the private form of governing of innovation becomes visible the moment it clashes with public forms of governance as innovative space.
My paper draws on ethnographic research in and with tech communities and networks in the San Francisco Bay Area. Specifically, I analyze the move of an enclave of actors from a network in the Bay Area to Berlin to expand activities and reach. In my research field, the term 'assetization' refers to social relations and the 'ecosystem' that relies heavily on the virtual sphere. I show how social relations are made tangible and valuable through membership, narratives of community, and future capabilities. I also show how networks as assets are used as promissory infrastructures that help to generate revenues through demonstrating capacities and creativity rather than actual goods. In this specific case, I deal with how the assetization of social relations relies on particular rhetoric, infrastructure, and mechanisms, among other things, that exist in the Bay Area, how this assetization becomes brittle however when faced with an innovative bureaucratic administration, e.g. a local authority for the economic development of Berlin. This leads me to the question: if social relations are assetized, is the 'ecosystem' then the mode of governance that delivers this assetization?

194 TEMPORAL TENSIONS OF DYNAMIC CAPABILITIES: THE INTEGRATION OF EXTERNAL RESOURCES AND THE IMPLICATIONS OF ASSETIZATION FOR NON-PROFIT HYBRID ORGANIZATIONS

Jane Bjørn Vedel (Copenhagen Business School) Kean Birch (York University)

The literature on dynamic capabilities takes assets as givens, leaving the processes through which organizational assets are created and integrated under-explored. In this paper, we argue that the contingent socio-material practices of diverse organizational actors are implicated in the transformation of external resources into organizational assets – defined as a process of assetization. Our paper is based on an extensive, qualitative study of large grants awarded to professors in universities in a northern European context. We show that professors integrate external resources as organizational assets by framing them as assets (e.g., that buy grant holders time, career, and recognition) and by turning them into organizational assets (e.g., that provide the organization with new equipment, groups, people, and interorganizational relationships). Following from this, we show that the integration of grants as assets results in temporal tensions, associated with the temporariness, temporal rhythms, and time horizons of these external resources. These findings advance our theoretical understanding of dynamic capabilities by emphasizing the process of assetization and the temporal tensions inherent to the management of large-scale resources and assets. Moreover, they provide a window into the organizational implications of scaled-up recourses in higher education.

917 ASSETIZATION IN SCIENCE - GOVERNING RESEARCH THROUGH BIBLIOMETRIC “DATASSETS”

Anne K. Krüger (Berlin-Brandenburg Academy of Sciences and Humanities)

The constantly progressing digitization of all kinds of everyday practices also contributes to a growing production of data about them. Fourcade and Healy (2017) observe an „institutional data imperative to collect as much data as possible” (ibid.: 9), however, without having any particular purpose in mind. Yet, Birch et al. (2021) argue that it is not data as such but that it needs “techcraft” such as metrics and analytics technologies to make these data become valuable. Beauvisage and Mellet (2020) also emphasize “data activation regimes” that make data usable for specific purposes. These authors thus understand data as “datassets” (ibid.) and their value as dependent on the infrastructures that process and relate them to specific goals.
My presentation focusses on a particular “data activation regime”, namely, on bibliometric infrastructure in academic performance measurement. In science, data on publications and citations have a long-standing tradition in being used for research evaluation and governance. Yet, with new digital possibilities to extract information from research articles such as about funders, grants, or research organizations as well as with the rise of “altmetrics” that comprise new sorts of data such as clicks, downloads, or tweeds, much more data have become available and are already used for mapping the “value” of individual researchers, research organizations, or even entire national research systems for governance purposes. Simultaneously, citation database providers such as Clarivate Analytics or Elsevier have turned into data analysts followed by new providers and databases such as Dimensions or Google Scholar entering the bibliometric landscape turning research evaluation into a new “market place” (de Rijcke & Rushforth 2015).
Drawing on insights from infrastructure studies (Bowker & Star 1999; Kornberger et al. 2019), I address the sociomateriality of this bibliometric infrastructure that turns bibliometric data into assets thereby shaping the understanding of “valuable” science.

412 ‘INNOVATION IN TECHNOLOGY’ INSTEAD OF ‘INNOVATION IN THINKING’? ASSETIZATION IN ACADEMIA AND ITS EPISTEMIC CONSEQUENCES.

Maximilian Fochler (University of Vienna) Ruth Falkenberg (University of Vienna)

In this paper we trace a particular kind of assetization dynamic in research practices. We argue that innovative research technologies, often acquiring a central role in researchers' practices and decisions, can be understood as assets that help researchers to anticipate future academic revenues in the form of publications or successful grant applications. Faced with both the need to accumulate academic capital to make a living in academia and with many uncertainties about the future, finding ways of anticipating future revenues often plays an essential strategic role in science. We illustrate that innovative research technologies provide a suitable means for doing so: First, because they promise productivity through generating novel and interesting data and hence publications. Second, because they allow a signaling of innovativeness in contexts where research is evaluated, even across disciplinary boundaries. Enrolling innovative research technologies as assets thus allows researchers to bridge partly conflicting valuations of productivity and innovativeness they are confronted with in the research landscape, through making parts of the uncertainty inherent in innovation more calculable.
However, we also show that the employment of innovative technologies in anticipation of future academic revenues is not always aligned with what researchers value epistemically, but that considerations about potential revenues derived from innovative research technologies sometimes seem to override particular epistemic valuations. Illustrating these dynamics, we show that processes of assetization in science are not neutral but come to govern research practices and particularly decision-making of researchers in ways that can have significant epistemic consequences. We suggest that this is concerning, as dynamics related to the assetization of research technologies might polarize science in favor of technology-intensive research endeavors at the expense of other, potentially equally important kinds of research, and shift what comes to count as innovative in science.

Room N115 - Panel 085 UNSEEN PARTICIPATION? WHEN THE UNINVITED SHAPE MATTERS OF COLLECTIVE CONCERN

Session 2

387 UNRECOGNISED PARTICIPATION AT THE MARGINS OF THE CITY: AN EMPIRICAL STUDY OF RESILIENT NEIGHBOURHOOD-MAKING

Sabrina Rahmawan-Huizenga (Erasmus University Rotterdam) Lieke Oldenhof (Erasmus University Rotterdam) Hester van de Bovenkamp (Erasmus University Rotterdam) Roland Bal (Erasmus University Rotterdam)

Based on a multi-sited ethnography of 'resilient neighbourhood-making' within the city of Rotterdam, we critically scrutinise unseen forms of participation that escape institutional resilience as an unrecognised form of 'doing' resilience at the margins. We argue that these mundane practices at the margins are either left unseen, unrecognised or regarded as nuisance by policymakers and professionals.
We discern small forms of resistance in daily practices of resilient neighbourhood-making: i.e. critique expressed by active citizens about the fact that voluntary community work - that is, the unpaid labour of mainly women which is used as a prime example of neighbourhood resilience by the local government keeps them in a vulnerable and unequal position. Other examples include the public outrage about commercially putting a (state-owned) community building with several important social functions for the community up for sale, and a resident who provides meals for fellow residents through a hidden soup-kitchen in the basement of his flat. Common to these forms of unrecognised participation is that they escape institutional check and balances of resilience as governmental program and point attention towards governmental precarization through its resilience program (Lorey, 2015).
We argue that citizens' participation including their resistance as well as their everyday routines are in fact signs of 'doing' resilience. By caring for each other and their living environment - in one of the poorest urban areas in the country - they perhaps offer a view on 'real' resilience (King et al., 2021). It is important to direct attention towards these unrecognised forms of resilience. By offering alternative visions for city-making and living together, they potentially disrupt the resilience governance program and move beyond resilience as post-political instrument (Kaika, 2017) for dealing with urban issues.

607 CREATING AFFECTIVE ENVIRONMENTS IN CITY-MAKING PRACTICES: AN ODE TO JOY AS BOUNDARY SPANNING SKILL

Beitske Boonstra (Erasmus University Rotterdam)

Todays' urban challenges are highly complex, due to increased socio-spatial and political fragmentation (McFarlane, 2020) and interdependency of diversified yet autonomous actors and networks (De Roo et al., 2020; Buijs et al., 2009). In this multiplicity, 'city-makers' stand out: social entrepreneurs and community activists deploying professional skills for the benefit of their communities (Franke et al., 2015). Working from non-hierarchical and non-institutional positions, they are renowned for setting up small-scale cross-boundary collaborations which involve – amongst others – civil, social, business, and public stakeholders.
Ethnographic studies of city-makers in Rotterdam provide insight in skills deployed in weaving together urban fragments and developing solutions for wicked urban problems, especially the deployment of humor and affect – a skill often overlooked in governance literature. This paper theorizes humor and affect through the ontological lens of assemblage theory, which considers affect an agentic and productive power that, when intentionally and joyfully deployed, redirects power flows, loosens participants from seemingly intractable habits, establishes personal relations and engagement in collective re-imaginations, and weaves together bodies and actions into synthesis and change (Bennett, 2005; Dewsbury, 2011; Dovey, 2011; Müller & Schurr, 2016).
This paper relates these insights to boundary spanning literature (Van Meerkerk & Edelenbos, 2018), which underscores personal characteristics such as empathy and familiarity (Giaretta, 2013; Williams, 2002), but falls short in translating these into deployable skills. Moreover, boundary spanning literature often considers organizational boundaries as structural, stable, known (Baker, 2008) whereas in the complexity of urban governance, boundaries rapidly emerge, dissolve and change. This paper theoretically and empirically illustrates how assemblage study – through its inductive relational approach (Perrotta, 2021) – widens the study of governance towards skills that explicitly deal with the complexity, fragmentation, multiplicity and dynamisms of todays' urban worlds, and enable urban actors to shape societal orders beyond formal institutional frames.

212 INFRASTRUCTURING (UN-)INVITED PARTICIPATION IN URBAN PLANNING – SELF-ORGANISED COLLABORATIVE HOUSING BETWEEN COLLABORATION AND CONTROVERSY

Andrea Schikowitz (University of Vienna, Dept. of Science- and Technology Studies)

Like many other sociotechnical domains, urban planning has also seen calls for more participation and a "democratisation of expertise" (Nowotny, 2003) being embraced, such as inviting citizens to contribute their concerns and ideas for being able to meet new challenges and demands. Simultaneously, "uninvited" participation in shaping urban spaces has also gained ground – here I focus on self-organised alternative or collaborative housing groups who shape and simultaneously challenge planning beyond their private living spaces.

STS scholars have argued that the transformative, subversive or reinforcing effects of different invited and uninvited participation practices in planning and beyond are contingent, situated, and unfolding effects in non-linear ways (Farías, 2011; McFarlane, 2012; Metzger, 2014). Moreover, invited and uninvited forms of participation in planning cannot be neatly separated, they are related to and in tension with each other and with official planning in multiple ways (de Souza, 2006; Schikowitz & Pohler, 2021).

I thus empirically examine how diverse invited and uninvited planning actors are contributing to and negotiating the development, testing and implementation of alternative and more collaborative and cooperative forms of housing in Vienna. As planning (both invited and uninvited) always builds on knowledge and, more importantly, also guides the production of new knowledge (McFarlane, 2011; Abbott, 2005), I focus on the knowledge infrastructuring practices which are unfolding within and between the heterogeneous actors concerned with collaborative housing in Vienna.

I draw on materials produced in a multi-sited ethnography following collaborative housing groups and their activities to different sites and formats (public and semi-public events, meetings, social media, documents) where they encountered other actors involved in urban planning, such as municipal policy makers and politicians, urban studies scholars, civil society initiatives, professionals and service providers. In addition, I draw on interviews with members of collaborative housing groups.

Thursday 7th July

14:00-15:30

Room N101 - Panel 007 ECOLOGICAL VALUING WHEN THE STAKES ARE HIGH: ON THE PRACTICALITIES OF NATURE-CULTURAL FLOURISHING

Mandy de Wilde (Department of Anthropology, University of Amsterdam, the Netherlands)
Irene van Oorschot (Life Sciences and Society Lab, KU Leuven, Belgium

In the midst of unfolding ecological crises - global warming, soil and air contamination, toxic spills and pollution - feminist-inspired STS invites us to explore possibilities for living and dying well with human and nonhuman others (Haraway 2016, Tsing, Bubandt, Gan, and Swanson 2017). But what constitutes 'living well' and 'dying well' in different situations? And how are conflicts and uncertainties about living well handled in practice?

Empirically examining the ways in which judgments are made about living and dying well, this panel explores how valuation studies may contribute to these broader feminist concerns. From valuation studies we learn that what is qualified as 'good' is an outcome of situated and local undertakings (Mol, Moser, and Pols 2010). The ecological 'good', then, is not homogeneous nor an abstract good: depending on the situation, there are different 'registers of valuing' (Heuts and Mol 2013; Mol 2016) at stake. These registers – also interchangeably referred to as 'regimes', 'economies', or 'worlds' – represent ways to attach value and distribute ethical, political, and affective attachments. In nature conservation, for instance, the ecological good takes the shape of an uneasy alliance between conservation and climate adaptation; in urban green management the ecological good is the outcome of a clash between upholding public safety and biodiversity; while in sustainable households it can be more or less embodied as personal hygiene. Put differently, to practice ecological value(s) entails drawing heterogeneous registers of valuing together, constantly, sometimes aligning them, often leaving them in tension, and at other times trading them off. Further, various modes of knowing – e.g. from tactile, embodied and affective knowledges to scientific standards, protocols and formats - are implicated in attaining an ecological good of some sort.

As part of those alignments, tensions, and trade-offs, some relations will flourish, for instance between ecologically-minded citizens and the microbes and other awkward creatures (Ginn, Beisel, and Barua 2014) they invite into their households and bodies. Other relations are marked as undesirable and ecologically 'bad', for instance between invasive species and their certain ecologies. This raises the question how alignments, tensions, and trade-offs between registers of valuing are navigated in practice, and as a result, which specific ways of living are made to matter. Whose interests and which relations are at stake when navigating potentially contrasting registers of valuing? What are the controversies involved? And how may such practices of navigating different registers of valuing in practice help us (re)think what nature-cultural flourishing entails in the wake of ecological crises?

In this panel we invite contributions that think with specific controversies and cases to best draw out the local, situated character of achieving an ecological 'good', to analyse which registers of valuing are mobilised, and which relations may be made to flourish as part of such judgments. We are particularly interested in case studies and ethnographies that:

examine the ways a plurality of registers of valuing are negotiated in practices, with a particular emphasis on potential conflicts, tensions, and trade-offs between these different registers;

explore such issues in e.g. nature conservation, urban green management, sustainable lifestyles and biotechnology;

highlight the relationship between registers of valuing and knowledge practices, including both formal knowledges and embodied and affective modes of knowing.

Session 1

59 CORALS AS SERVICE PROVIDERS: ECOSYSTEM SERVICES AND VALUE RELATIONS BETWEEN CORAL SCIENTISTS AND CORALS

Elis Jones (University of Exeter)

In this paper I examine two controversial concepts central to discussions of the value of coral reefs, and ecological value more broadly: intrinsic value and ecosystem services. These concepts have come under significant criticism, intrinsic value for being insufficiently practical, and so unhelpful in the practice of conservation, preventing recognition of the practical benefits of the existence of a system (Maguire and Justus, 2008), and ecosystem services for reducing and commodifying the diverse or infinite value of nature (Schröter et al., 2014; McCauley, 2006). These are often painted as opposing or incompatible approaches to valuation, and arguments have been made to reduce focus on, or even entirely do away with, one or the other (Maguire and Justus, 2008; McCauley, 2006).
Rather than debating the semantics of these terms, or their appropriateness for use in conservation, I offer something else here instead: an analysis of the pragmatics of these terms, that is, how they are used in practice, and how their users think about them, based on interviews with coral scientists and analysis of the scientific

literature. The importance of reefs, and the seriousness of their plight, makes their case particularly suitable for understanding modes of valuation. I argue that close attention to the pragmatics of these terms shows that they are considerably more nuanced than their detractors might argue: intrinsic value refers to a cluster of different sorts of value, whilst ecosystem services offer more than a naïve extractionist view of nature, and represent a site for emergence of innovative approaches to valuation. After presenting these nuanced versions of both concepts, I then argue that there are surprising degrees of overlap between them, and that they are more amenable to one another than often considered. This points towards a richer, cross-disciplinary conceptual toolkit for describing the value of nature.

840 BEAVERS AND HUMANS AS BOUNDARY BUILDERS AND BREAKERS: A MULTISPECIES ETHNOGRAPHY ALONG THE SOUTHERN DOMMEL RIVER BASIN

Inge Dekker (Institute for Science in Society - Radboud University)

This ethnographic research follows the development of human-beaver entanglements, together with human surveyors along the southern Dommel river basin in Brabant, Netherlands.
The first beaver was spotted here seven years ago, and slowly but surely more beavers are surfacing. They construct homes and dams in the very waterscape that their conspecifics were eradicated from 300 years ago. Today, beavers are promoted as ecosystem engineers restoring wetlands and biodiversity. The beavers descend from previously reintroduced families in Belgium and the Netherlands, and they now spread out to unforeseen places.
The re-emergence of beavers potentially marks a shift in management approaches. Dutch water management, celebrated for is successful control of water, is undergoing an alleged paradigm shift with the new credo of 'living with water instead of fighting it'. Along the Dommel, many river restoration projects emerge that seek to improve safety, water quality, increase biodiversity and restore wetlands. In this way the river is not only perceived as a sociotechnical infrastructure serving human needs, but also as link in the 'nature network' and as habitat.
This approach counters the previous anthropocentric paradigm. Yet, to what extent? Boundary-crossing animals like beavers, are invited to shape the landscape and consequently incite debates about good coexistence. Beaver dams and digging complicate water and land management. Conflicts have been emerging over levee stability, water levels, preferred nature, trees, leading in some cases to the culling of beavers.
I follow the development of human-beaver interactions, affective relations and power dynamics as mediated by technology and water. With this case study, new emerging entanglements show how humans and beavers are aligning their ways of life, and how various human values are debated, materialized and compromised in these specific spaces of interaction. Finally, this project reflects on the researcher's aim to go beyond the human.

709 RESILIENCE, GOOD NATURES, AND GOOD HUMANS: RESHAPING ECOLOGICAL VALUE IN AN AGE OF CLIMATE CALAMITY

Irene van Oorschot (Life Science and Society Lab, KU Leuven)

Resilience has, over the last 15 years, emerged as a dominant environmental policy horizon. Faced with both chronic environmental stressors and sudden weather events, environmental management professionals are increasingly asked to 'foster resilience' and to enhance their ecosystems' capacity to adapt to, or bounce back from these stressors. Resilience is also a highly controversial policy horizon: proponents herald it as a form of 'holistic biosphere stewardship' whereas its critics see it as a form of neoliberal, laissez-faire environmental management. Crucially, very little attention is currently paid to the way resilience is actually practiced, and the ways in which it is reshaping conceptions of 'good environments' as well as 'good environmental management'.
This contribution explores how 'resilience' extends, disrupts, and reconfigures existing modes of valuing and evaluating the ecological good. Approaching resilience as a generative buzzword and fuzzword, it tracks recurring controversies about its implementation and, drawing on ethnographic research among members of the Dutch State Forestry Agency, explores how such controversies are navigated in practice. It zooms in especially on situations in which various forms of human and nonhuman living are specifically at stake and not easily reconcilable, for instance in cases in which specific species have to be 'controlled' – including humans.

634 CRAFTING POUCHES, CRAFTING RELATIONS: ATTENDING TO TENSIONS IN KNITTING FOR WILDLIFE CONSERVATION

Stephanie Lavau (University of Melbourne)

During the devastating Australian bushfire season of 2019-2020, hundreds of thousands of crafters from around the world picked up their needles to knit woollen pouches for orphaned wildlife. Amidst the stories of young koalas with burnt paws, wombats rescued from pouches of deceased mothers, and heat-stricken baby bats falling from trees, such crafting practice was presented as making 'goods' such as comfort, warmth, and shelter. Knitting, however, is not an innocent practice. As with other conservation practices, I argue, it is world-making rather than simply world-saving. When we knit, we stitch things together, we undo others, we make knots, and sometimes we drop or add stitches. In other words, when we knit, we pattern relations; sometimes deliberately, sometimes accidentally or incidentally.
In this paper, we attend to the ways in which knitting woollen pouches for orphaned wildlife creates tensions between different registers of valuing, such as activist and commercial, ecological and imperial, geopolitical and domestic. We approach this through doing, an experiment in knitting as embodied, collective, and affective

practice. Our knitting practice resonates with Joanna Mann's (2017) 'making as method' and Kat Jungnickel's (2018) 'sociological sewing'; that is, crafting as inquiring, sensitising and enlivening. This crafty provocation is patterned as a series of reflective knitting exercises through which we explore the relations that we are making, who and what we are knitting with, and the worlds that we are bringing into being as we make woollen pouches for orphaned marsupials. This knowing-knitting highlights more broadly some of the ways in which tensions between different registers of valuing are managed in conservation practices.

Room N118 - Panel 021. CLOSING THE LOOP OF EMPIRICAL ETHICS: AWAY FROM NORMATIVITY AND CRITIQUE AND BACK AGAIN

Tamar Sharon (Radboud University)
Marthe Stevens (Radboud University)
Andrew Hoffman (Radboud University)
Lotje Siffels (Radboud University)

Empirical ethics is an approach that can be loosely understood as "the empirical study of ... forms of the good in practice" (Pols 2018; cf. Thévenot 2001). On the one hand, mirroring shifts in bioethics, epistemology, and social studies of science, it seeks to move the field of ethics beyond both a reliance on universal principles and an emphasis on the development of normative criteria for what should count as a 'good' practice (Hedgecoe 2004; Pols 2015). On the other hand, empirical ethics also aims to move the field of ethics away from an emphasis on critique that has long motivated much research in the interpretative social sciences (Jerak-Zuiderent 2015; Latour 2004). Instead, empirical ethics takes as its focus the empirical description of everyday morality. In making this double move, the approach has shifted research questions in promising new directions, resulting in a rich body of scholarship in ethics and philosophy of technology, STS and adjacent fields both in terms of content and methods (Haimes 2002; Lehoux et al. 2012; Mol 2002; Molewijk et al. 2004; Pols 2016; Heeney 2017; Swierstra 2015).

However, several pressing (and interrelated) questions remain unanswered: is empirical ethics too apolitical? What kind of biases does the common focus on professionals and practitioners in empirical ethics lead to? Should empirical ethicists be in a position to make more prescriptive claims based on their descriptive work -- and if so, what resources at the intersection of STS and empirical ethics might be best suited for doing this work? In other words, to what extent do proponents of empirical ethics have a warrant or imperative to "close the loop" of empirical ethics -- that is, to render evaluations of the 'good'-ness of practices from beyond those practices, yet in a way that draws upon the situated accounts of everyday morality that empirical ethics approaches aim to generate?

Reflecting on the theme of EASST2022 to consider the politics of technoscientific futures, here we reflexively consider the future(s) of empirical ethics as a fruitful approach for unpacking and reshaping practices in science, technology and medicine in all their moral and political complexity. To wit, we invite papers covering a broad range of empirical topics but which critically engage with the pasts, presents, and futures of empirico-ethical analysis.

Session 1

473 A STRATEGY OF COMPARATIVE RE-IMAGINATION AS JUSTIFICATION FOR INTERVENTIONS IN EMPIRICAL ETHICS

Ville Aula (London School of Economics and Political Science)

Empirical study of goodness in practice tries to undo strict division between practices and normativity/morality. Nevertheless, when researchers attempt to "close the loop" with the practices they study, they are forced to formulate a conceptual grounding that warrants their chosen intervention. In this paper I contrast between strategies that warrant the intervention on 1) empirical ground derived from the subject matter, and 2) moral and normative aspirations. Scholars have lately called for interventions to be based on the latter, whereas the former, which were central to early empirical ethics and epistemology, are accused of quiescence. In this paper I draw from the works of Noortje Marres and later works of John Law to propose a new empirically-grounded foundation for interventions, which avoids imposing external normative standards. For the purposes of the paper, I call it the strategy of comparative re-imagination. The politics this strategy imagines are understood as ontological politics founded in the tensions between possible states of the world, a conceptualization that contrasts with normative politics founded on tension between different moral aspirations. I compare the strategy with four strategies that each use different normative warrants for their intervention: 1) moral philosophical strategy 2) emancipatory strategy 3) interest-based strategy, and 4) care-ful strategy. All four strategies include a normative justification to which kind of good and which intervention they warrant. In the strategy of comparative re-imagination, it is not the forms of good that are taken as the site of intervention, but the forms of practice that that could be available. The strategy thus "closes the loop" on a conceptual foundation that avoids taking a position on what goodness ought to be. Instead, it facilitates reflection by the practitioners through interventions grounded in ontological politics.

732 TO TAKE A STAND BETWEEN THE 'GOODS' AND 'BADS': A PROPOSAL FOR A PRESCRIPTIVE EMPIRICAL PHILOSOPHY

Lotje Siffels (Radboud University) Andrew Hoffman (Radboud University)

'The philosopher who enters a field with determination and garnished with criticism, norms or convictions, will notice that the actors have preceded her' (Mol, 2000, 15), Mol warns the empirical philosophers who will succeed

her. Empirical philosophy favors description over prescription, asking how norms and practices are done in practice rather than prescribing which norms and practices should be upheld. This descriptive turn bridges a distance that 'traditional' ethics created between philosophical theory and real life. In bridging one distance, however, this rejection of prescription creates a new one. As they go about describing the practices of "goods" and "bads" as if seeing them from afar, or above, a distance is created between the empirical philosopher and their subject. Choosing to take such a distance is a dangerous (Bowker and Star, 1999: 5-6) move, especially when what is at stake is nothing less than societal (in)justice. Empirical philosophy only offers a way of describing different "justices" (Boltanski and Thévenot, 2006), without giving any way of prescribing which justice ought to abide. A purely descriptive approach seems too withdrawn, perhaps even bordering on what Haraway (1988) calls a 'God-trick'.
Our presentation investigates whether standpoint theory may offer a way of bridging this distance. Instead of only describing a field of norms and justices, the empirical philosopher starts by making their social position explicit, as well as their norms and ideas on (in)justices related to their subject. When describing the plurality of "goods" and "bads" in the field, they keep their normative standpoint in mind. We investigate this as a method for offering a prescriptive reflection on the risks and dangers of a practice that comes from placing themselves as an actor in a deliberative space of norms and values, without relying on the universal claims of traditional ethics.

1007 EMPIRICAL ETHICS BETWEEN THE DEMAND TO BE PRESCRIPTIVE AND THE FEARS OF EXPERTOCRACY

Baumann Martina (Institute for technology assessment and systems analysis, Karlsruhe Institute of Technology)

Although the observation that there is a focus on the empirical description of everyday morality of professionals can be confirmed for the field of resource allocation ethics, this does not at all amount to empirical ethics being apolitical and/or non-prescriptive. Empirical ethics typologies (like Molewijk et al. 2004) offer more options for prescriptive claims than modulating ethical theories or principles, which are indeed rarely touched by empirical ethics investigations. I argue that empirical ethics
1) is, overall, not apolitical with regard to its choice of topics, as studies empirically investigate discriminating inequalities in technology access in health care systems, thereby turning attention to controversially discussed and politically pressing issues, or the political implications of value shifts and behavioral effects of technology use by providing nuanced empirical accounts (as argued by Tamar Sharon 2018 for the case of self-tracking technologies).
2) can and does make prescriptive claims, mostly and naturally when evaluations about the ethical "good"-ness of practices already exist, but are not followed, e.g. ethical guidelines practitioners consented to (explicitly or implicitly via their professional ethos); but also, as I will argue in more detail with regard to the provision of limb prostheses, in cases of conflicting political interests like economic pressures and the rights of disabled people to social inclusion.
3) has to be apolitical regarding the question of the status of ethics professionals themselves in policy-making. Even the best empirical data cannot give the "last legitimation" for scientifically unsolvable ethical issues like triage decision rules in case of limited resources, which some health care systems experienced during the corona pandemic. However, STS and empirical ethics should use their "resource" of public engagement more for these "hard" problems of ethics in order to contribute more to the political discussion without running into the (probably feared) dangers of expertocracy.

419 THE FUTURE OF NORMATIVITY IN TECHNOLOGICAL DEVELOPMENT? EMBEDDED ETHICS AND SOCIAL SCIENCE

Daniel Tigard (Technical University of Munich) Maximilian Braun (Technical University of Munich) Svenja Breuer (Technical University of Munich) Ruth Müller (Technical University of Munich)

Emerging technologies such as artificial intelligence and advanced robotics are presenting a wide range of opportunities, challenges, and questions regarding how the novel social, ethical, and political implications can be adequately addressed. A similarly large range of innovative frameworks has been introduced, highlighting the importance of ethicists and social scientists partnering with developers and research teams in technology, and often relying upon fundamental tenets of empirical ethics. These include Responsible Research and Innovation, Constructive Technology Assessment, Ethics Parallel Research, and a recent model—one that is harnessed by our Responsible Robotics (RR-AI) project—known as "embedded ethics". Embedded ethics has been described as a process of identifying and addressing social and ethical aspects of emerging technologies concurrently with developers' technical education or at early stages of development (Grosz et al. 2019; Bezuidenhout and Ratti 2020; McLennan et al. 2020). In the RR-AI project in particular, we gather and analyze data concerning, for example, the visions of individual researchers, the hopes and concerns of prospective users, and the challenges within the intended domains of application. Accordingly, a greater diversity of perspectives can be fed back into development in ways that help to promote a sense of social and ethical responsibility. But to what extent, and in what ways, does the embedded ethics approach politicize the development of emerging technologies? What challenges might arise with the movement toward increased inclusivity and deliberation? Should the diverse perspectives and values we encounter be reconciled in ways that provide normative guidance for development practices? If so, how? In this paper, we argue that embedded ethics may represent a step forward for the future of empirico-ethical research and we reflect on its potential for building normative considerations into concrete development settings.

Room N108 - Panel 028 TECHNO-POLITICS OF INTEROPERABILITY

Session 3

408 DEVELOPING THE INTEROPERABLE BORDER: IMAGINARIES OF INTEROPERABILITY IN EU BORDER SECURITY R&D

Clemens Binder (Austrian Institute for International Affairs - oiip)

Interoperability has evolved into a new ideal for the digitized security infrastructures applied in EU border control. Rendering the variety of databases and systems 'interoperable' to foster the exchange of data, accelerate decisions of access and make practices of bordering more efficient is reshaping the politics of border control in the EU. At the same time, the EU invests large sums of money into the Research and Development of new technological devices with the purpose of finding resolutions to prevalent problems and 'crises.' R&D in the context of the EU security research programmes under the framework Horizon 2020 and Horizon has gained considerable importance in policy circles, for the reason that it specifically addresses policy objectives. Achieving interoperability is a central policy objective that is addressed in programmes and projects of relevant R&D in border security.
This paper seeks to explore how these policy goals translate into research programmes and projects and how R&D and the politics of interoperability become co-productive in a sense that R&D is not only shaped by but also constitutive of policies of interoperability. By conceptualizing policy goals as (sociotechnical) imaginaries, this paper examines how perceptions of interoperability as advantageous for security are reflected in security research programmes and thus shape how R&D in the field is conducted. It does so by relying on document and interview material that give insight into not only what imaginaries are publicly issued through policy documents, but also in a more interpretive fashion outlines how interoperability is perceived by different actors in the fields of border security and security research.
Therefore this paper contributes to outline how the idea of interoperability permeates a wide array of security and bordering practices and how the imaginary of the interoperable border contributes shaping the way the EU manages and secures its external border.

1031 THE TECHNOPOLITICS OF EXPERTISE: SHAPING AN INTEROPERABLE BORDER REGIME

Chiara Loschi (University of Bologna) Paul Trauttmansdorff (University of Vienna)

The notion of interoperability contains a different range of meanings, values, data practices, or technologies. In the EU, interoperability has recently been promoted as an instrument to interconnect large-scale biometric databases and as a response to border and migration management crises. It has also brought to the fore the role of experts and technical expertise in the formation of the EU border regime and its policies.
In this paper, we approach the technopolitics of interoperability by looking at the case of the High-Level Expert Group on Information systems and Interoperability. The group worked between 2016-2017 to advise the European Commission in how "to achieve the interoperability and interconnection of information systems and data management for border management and security" (EC 2016). Formed through experts from national and transnational authorities, this expert network sought to establish a "strategic vision" for interoperability.
Given the group's extensive influence on policymaking, we are interested in the types of knowledge, visions, and prescriptions that impacted the technical and legal design of interoperability. Drawing on an STS approach, we will dig specifically into the transformative capacity of documents to highlight how they have enabled and performed a specific form of technopolitics of interoperability.
To do so, we will focus on three dimensions:
First, we ask how documents frame and define both expertise and experts in the digital governance of migration and borders, establishing their political relevance, positionalities, relationships, and authority.
Second, we ask to what extent these documents participate in defining issues and temporalities for solutions, and how they contribute to the ongoing "spiraling process" of securitization of migration in the EU.
Third, we explore how the Group's reports crystallized knowledge and sought to create a technological solution, e.g., vis-à-vis ongoing tensions between supra-nationality and (national) sovereignty interests resurfacing during the crisis of the border regime.

0758 GOVERNING EUROPEAN CLOUD INFRASTRUCTURES

Andreas Baur (University of Amsterdam/University of Tübingen)

GAIA-X is an initiative to create a European cloud ecosystem aiming at boosting digital innovation while securing Europe's sovereignty in a global IT infrastructure. Boldly portrayed as "Europe's moon-shot", it is said to balance the power of non-European cloud providers. It will provide a platform of interoperable and approved services obeying to GAIA-X standards and European regulation. Through the creation and regulation of interoperable cloud services, data is expected to flow more freely – yet in a European way. GAIA-X is meant to change the way clouds are used and designed and to translate "European values" into cloud infrastructure.

Big American players like Google, Microsoft or Amazon, after some reluctance to join, play a considerable role in the GAIA-X development. This shows a multi-dimensional conflict of a political fight for Europe's sovereignty and for strong regulation of the IT sector – while at the same time being a non-political project backed by small European companies and including US players that it is working against.
This paper sheds light on what actors and governance are enabled in this specific setup. I argue that GAIA-X can be understood as a tool for Europe to regulate the IT sector without traditional regulation – and to position itself between the two cloud powers USA and China. Centralisation and decentralisation are mirrored in the coupling of political regulation, self-regulation and technological regulation of interoperability. By analysing the debate within and architecture of GAIA-X, I show that 'governance of' and 'by' platforms (Gillespie 2017, DeNardis/Musiani 2016) are joined and combined in Europe's endeavour to govern (foreign) infrastructure companies without using 'hard' regulation.

967 THE POLITICS OF EIDAS: IDENTIFICATION AND INTEROPERABILITY IN THE EUROPEAN UNION

Baki Cakici (IT University of Copenhagen)

A Europe-wide electric identification regulation (eIDAS) has been in development since 2014 to seamlessly connect national identification systems between EU member states. In 2020, the President of the European Commission Ursula von der Leyen set electronic identification (eID) as a political priority in her state of the union address, and in 2021 the Commission revised the eIDAS regulation, making it mandatory for all member to standardise electronic documentation including driving licences, passports, national identification cards and digital agreement signatures. This push toward standardising the identification of nation state subjects plays out against the backdrop of the conflict between competing visions of the European Union as an intergovernmental organisation of sovereign states versus a politically integrated federal union.
In this talk, I draw on a pilot study that involved interviews with eIDAS experts and analyses of publicly available technical documentation on eIDAS and related European eID initiatives. I outline how the interoperability requirements of the eIDAS system necessarily come with political commitments, and I discuss whether the development and implementation of a European eID system can be seen as a tool for creating the technical, social, and political conditions for centralising power within the European Union.

664 FORMATTING EUROPEAN SECURITY INTEGRATION THROUGH DATABASE INTEROPERABILITY

Rocco Bellanova, Universiteit van Amsterdam (UvA), Georgios Glouftsios (Università di Trento)

In this article, we explore the security politics of EU database interoperability, inquiring into how knowledge infrastructures undergird European security integration. Sitting at the intersection of Science and Technology Studies (STS) and critical approaches to European security, we unpack both the presumed challenges that generate the need for interoperability, and the socio-material solutions that should implement interoperability on the ground. We do so by emphasising the co-constitutive relation between database anxieties and interoperability mechanisms. By anxieties, we refer to what European institutions identify as the main epistemic and operational concerns that emerge from the current use of databases by security authorities across Europe. These anxieties are expected to be resolved by mechanisms that foster interoperability. The relation between database anxieties and interoperability mechanisms is less about problem solving, and more about defining the novel conditions of possibility for European security in a datafied world. We demonstrate that interoperability brings about a form of European security through datastructuring, rather than database integration. While far reaching in technological terms, interoperability is not about the introduction of a new overarching database, but about the management, re-organisation and repurposing of datasets that matter politically because they inform sovereign acts of policing and mobility control.

Room N107 - Panel 037 CARE AS A HIGH-TENSION ZONE: INVESTIGATING THE AMBIVALENCES OF CARE IN THE MIDST OF THE PANDEMIC

Session 2

893 CARE AS RESISTANCE: NAVIGATING TENSIONS AND TRADE-OFFS IN CARE DURING TIMES OF INFECTIOUS SOCIALITY

Anna Dowrick (University of Oxford) Kaveri Qureshi (University of Edinburgh) Tanvi Rai (University of Oxford)

The COVID-19 pandemic has fundamentally changed networks of caring relationships, with fear and infection control measures reconfiguring possibilities of care-based interaction (1). In this paper we examine narrative accounts of professional and informal carers who navigated tensions in care during the pandemic in the UK. We draw on interviews with people who had themselves become infected with Covid, sometimes in the course of caring. We study how they responded to disruptions to care in the context of infectious sociality.
Carers made complex trade-offs between risk and sociality to enable them to connect with, rather than distance from, those they cared for. These moments reveal what was at stake for participants, and can be interpreted as acts of resistance against ordering practices which centred infection control measures. In instances where acts of resistance led to their own infection, we explore participants' reflections on the value of care despite its potential consequences. Methodologically, we also offer insights into how we cared for participants and ourselves during research encounters, highlighting the challenges of co-constructing narratives when neither researcher nor participant knows where the story might go next.
Building from an interpretation of care as a form of ethically and politically charged affective practice(2), we connect the interactional work of care with the wider production of social orders(3). Through exploring how carers improvised caring practices, we contribute theoretical insights into the re-ordering of relations that are considered valuable to preserve in times of crisis, and the work required to produce these ways of relating.
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2. Puig de la Bellacasa M. Matters of care in technoscience: Assembling neglected things. Soc Stud Sci. 2011;41(1):85-106. doi:10.1177/0306312710380301
3. Ahmed S. Affective Economies. Soc Text. 2004;22(2):117-139. doi:10.1215/01642472-22-2_79-117

265 "YOU'RE AT ODDS WITH YOUR OWN VALUES": EXPERIENCES OF CARING WORK IN UNIVERSITIES DURING THE COVID-19 PANDEMIC

Martin Oliver (UCL Institute of Education) Eileen Kennedy (UCL Institute of Education) Allison Littlejohn (UCL Institute of Education)

The importance of care is well recognised in health, but – as a growing body of work shows – it also shapes many other contexts, such as education. In this paper, we explore how care is enacted by academic and professional staff in a University, and how the breakdowns that occurred during the Covid-19 pandemic cast new light on daily and mundane caring work (Kennedy et al 2022). We conducted a series of remote interviews during the early stages of national lockdown, inviting staff to also share photos and images that could surface sociomaterial arrangements that enabled caring practices. We asked staff to identify what and who needed caring for and found that the multiple roles associated with these different needs created 'high tension zones' (Star, 1991), in which many staff experienced the marginality that arises from trying to meet the expectations of multiple communities or systems simultaneously. However, in spite of no longer fitting comfortably into established stereotypes of the good educator, researcher, administrator or parent, staff nevertheless sought to sustain 'good care' through "persistent tinkering in a world full of ambivalences and shifting tensions" (Mol et al., 2010, p. 14). We discuss how Universities have overlooked these forms of care labour both during and prior to the pandemic. Recognising that neither the responsibilities staff identified nor the marginalities arising from multiplicity are really new, even if the demands of the pandemic has made them more visible, we ask: how might the 'high tension' zones that have always existed for people in academia be maintained and made less costly to inhabit? We conclude by relating these experiences to the question posed in this conference about the forms of social order that will become naturalized, and how previously invisible forms of caring labour might be made visible and valued.

1022 WHAT TO CARE FOR? TENSIONS BETWEEN CARE AND CARERS AMIDST THE COVID-19 PANDEMIC.

Sebastian Rojas-Navarro (Universidad Andres Bello) Samanta Alarcón-Arcos (Independent Researcher)

The COVID-19 pandemic has transformed and re-accommodated care entanglements as governments implement different policies, disrupting the everyday world we inhabit. At a local level, these restrictions took the shape of stay-at-home orders for entire regions, movement restrictions, a national curfew, and strict hygiene protocols for public spaces. These changes have modified the national landscape regarding how the social world operates and is experienced by individuals across the country. Drawing on data produced by the first National Survey of Informal Care Withing the Households and in-depth interviews conducted with survey respondents, this

presentation interrogates the aftermaths these forced transformations have had on sociomaterial care arrangements in Chilean households. Previous research in Chile revealed that care transformations pushed by the pandemic had seen the emergence of new human and non-human actors (Rojas-Navarro et al. 2022), affecting the materialities, spatialities, and care practices enacted within the households (Buse, Martin & Nettleton, 2018). Also, research shows that these arrangements posed an overburden of care responsibilities upon women, who are now even more responsible than before for tinkering and keeping care entanglements in place as the social world shuts down (Rojas-Navarro, 2021). We interrogate the reasons and rationales guiding this distribution of care work while considering that evidence shows that measures implemented either care for keeping care going or for carers' wellbeing but seem unable to do both. This requires further developing theorizations on the dynamics, tensions, and ambivalences that are inherent to the organization of care in neoliberal western societies, why also thinking about how to make sense of care under current critical conditions (Caduff, 2019)

266 CARING WITH AND ACROSS DISTANCE(S): METHODOLOGICAL REFLECTIONS ON RESEARCHING CARE PRACTICES DURING THE COVID-19 PANDEMIC

Merz Sibille (Brandenburg Medical School Theodor Fontane) König Franziska (Brandenburg Medical School Theodor Fontane) Paul Joshua (Brandenburg Medical School Theodor Fontane) Bergholz Andreas (Brandenburg Medical School Theodor Fontane) Holmberg Christine (Brandenburg Medical School Theodor Fontane)

The Covid-19 pandemic and its primacy on physical distancing has not only increased inherent tensions in care practices but might also afford a space for rethinking our methodological and theoretical approaches to collecting data on ‘care at a distance’ (Pols, 2012). This contribution emerges from the ethnographic study CoronaCare that explores the ambivalences and tensions within care practices during the Covid-19 pandemic in Germany (Paul et al., 2021). Here, we focus on the obstacles as well as the opportunities we have encountered conducting such research during the pandemic, advancing two main suggestions. First, challenging the proposition that the pandemic can only be researched digitally (e.g. Góralska, 2020) we suggest that while physical distancing prohibited close observation of mundane interactions, telephonic interviews offer underrated opportunities to share participants’ everyday lives as we have accompanied participants folding laundry, attending to children or preparing a family meal. Moreover, participants’ own documentation of their lives allows an element of agency and self-determination in data collection. And second, we propose that the pandemic has brought into sharp relief the increasing reconfigurations of ‘home’ and the ‘field’ (Günel et al., 2020) as we have conducted ethnographic research from our own homes, ourselves bound up in multiple care commitments. This heightened enmeshment of our personal and professional lives has introduced elements of mutuality and vulnerability that firmly anchor questions of care, about both ourselves and our participants, in the research relationship itself. Indeed, ‘staying home’ has itself become a mutual expression of care through distancing. While further throwing into question the ‘traditional’ understanding of fieldwork, the pandemic might thus be a welcomed opportunity to imagine novel, more ‘careful’ approaches to data collection that attend to our changing working and living conditions, also in post- pandemic times.

Room N114 - Panel 038 MAKING MEDIA FUTURES. FROM MEANINGS TO IMAGINATIONS AND EXPECTATIONS

Session 2

141 AI AND GENDER IMAGINARIES: REDDIT DISCOURSES ON TRAINING THE IDEAL AI BOT GIRLFRIEND

Iliana Depounti (Loughborough University)

This presentation focuses on an AI social bot, Replika, and how it is used by a subset of its subscribers to provide sexual/romantic intimacy. I investigate how users of Replika in a Reddit group project imaginaries of an ideal AI technology and girlfriend onto the bot, which ultimately shape and encourage their interaction with the AI. The users' perceptions, triggered by their AI and gender imaginaries, affirm Replika's value proposition as a fully customizable and anthropomorphic AI companion. The research questions addressed are: What are the characteristics of a good AI technology? What are the characteristics of the ideal bot girlfriend? Drawing on Bucher's (2017) concept of the users' algorithmic imaginary and observations about the feminization of AIs (Woods, 2018), the study examines how imaginaries of AI bots about intelligence and independence intertwine with gendered fantasies of cute, sexy and empowered girlfriends of postfeminist culture. A thematic analysis of the Reddit discussion identified three themes: (i) the expectation of an anthropomorphic yet machine-perfect AI,(ii) the desire of an empowered yet highly customizable and controllable girlfriend bot, (iii) co-creation and customization as the hallmarks of the ideal AI bot girlfriend experience. The results of this study offer a better understanding of how various imaginaries have the power to enact material realities and shape the engagement and practices of users with technology.

735 THE IMAGINARIES OF MERGING MINDS WITH MACHINES

Wenzel Mehnert (University of the Arts, Berlin & Technical University Berlin)

Throughout the twentieth century, research on brain-machine interfaces has inspired art in many different fields. Science fiction (SF) has taken up this emerging technology and produced various cultural artefacts that ascribe different functions and speculate on possible changes in our society.
The neurointerface blurs the boundary between humans and machines, imagines technomorphised hybrids and leads to new images of human being like the cyborg or the simulated mind within a computer framework. These imaginaries raise technophilosophical questions about the soul, about individuality and autonomy in the face of technological progress, about the qualia of life as well as the question of what it means to be and to be perceived. Spread through entertainment media such as computer games, books and moving images, these SF imaginaries are more than just entertainment, as they also shape the way we perceive and think about new technologies. They diffuse into areas outside of SF and form a cultural ecosystem surrounding the actual technology. Here, different Visioneers and Entrepreneurs commodify the speculative technofutures, reduce the critical visions to pure gadgetery and cut off the often deeply philosophical questions of SF. Seen in this way, the neurointerface becomes one of many examples of the discursive transformational process on the intersection between technological development and popular culture.
In this paper I reflect on the ecosystem of the neurointerface and trace the transformation of the trope through different discursive fields. I provide an insight into Neuropunk, a SF subgenre that encompasses a variety of science fiction narrations that negotiate the neurointerface as an object that imagines possible social, political and cultural change, and are preceded by different images of humans and notions of human-machine interactions. Through this example, this paper contributes to the study of SF as a resource for hermeneutic research on technofutures.

519 AN ARCHAEOLOGY OF THE FUTURE : IMAGINING AIRPORTS BEFORE AIRPLANES IN EARLY FRENCH SCIENCE-FICTION

Zacharie Boubli (Conservatoire National des Arts et Métiers (CNAM) - France)

This contribution focuses on the history of airports as sociocultural future-oriented locus. The perception of airports is indeed inseparable from their sociotechnical characteristics as mostly urban infrastructures that interface between air and land, serving as gateways to a worldwide reticular network, and routinely displaying advanced technology (from airplanes to passenger flow management). From the beginning of the "aeronautical age", airports have been the locus of a democratized promise to defy distances and boundaries through science and technology, a promise that reflects in their designs and attractiveness strategies.
The desire of a future rendered appealing played a key role in the early development of aviation, decades before the first motorized flights. Early french speculative fiction in the 19th and 20th (prior to 1919) centuries offers many images of future airports. An imaginary developed through novels, early comics and the press was making France the most air-minded nation prior to the 1920s, with Jules Verne or Albert Robida as the most prominent figures of this "dreamscape of modernity".

To track occurrences of airports in works mostly created before airplanes existed obliges to define airports functionally, as infrastructures that interface between ground and air mobilities. How accurate were the previsions regarding the aspect of future airports? Several aspects were successfully predicted, such as the need for passenger control and air traffic regulation. Others were not anticipated, such as the localization of airports further away from cities or the rise of security issues. A data-oriented approach shows that imagined airports are more present in the material towards the end of the 19th century, with a more specific correlation with Universal Exhibitions. We can thus postulate that the ability to envision future airports is connected to the comprehension of a not-yet-existing aerial mobility, which is imagined by analogy with other existing or emerging mobilities.

571 WHY DO THEY ALL HAVE FOUR WHEELS AND LOOK LIKE EGGS? -TECHNOLOGY EXPECTATIONS EFFECT ON PATH CREATION

Marie Bemler (Stockholm School of Economics) Albin Engholm (Royal Institute of Technology)

Path creation theory (Garud and Rappa, 1994; Garud, Kumaraswamy and Karnøe, 2010; Garud, Schildt and Lant, 2014) should enhance its focus on how the futuristic approach affects the path forward inside fields and organizations by expanding its connection to technology expectations (Borup et al., 2006; van Lente and Bakker, 2010; Bakker, van Lente and Engels, 2012), and imaginaries (Jasanoff and Kim, 2015). Research on path dependency and path creation explains when and under what conditions new paths are created from the inside (Garud and Karnøe, 2012; Karnøe and Garud, 2012; Kumaraswamy, Garud and Ansari, 2018), but research is relatively silent on how the narrative created about the future to initiate this change itself affects the present inside the field. In our article, we demonstrate what happens inside a newly opened field when the narratives of the future are used to create change. We do it through analyzing narratives of Self-Driving Vehicles in the public debate identified by examining the most viewed videos that discuss self-driving vehicles and society on YouTube. These videos were analyzed with narrative methodology, focused on the spoken content (Czarniawska, 2004; Reissner, 2011). Actors that were present in the found material through this method are media channels, technology suppliers, researchers, and consultancies and we establish that the narrative about the future is converging and is technology deterministic, creating expectations about the future technology and its role in society that are narrowed and locked in. Futuristic narratives affect the present through the technology deterministic storyline, conformity of the technical expectations and the newly created path becomes narrow with few possible ways forward, although in a different direction from the path that the field was following before.

560 “INDIGENOUS AND NATIONAL TECHNOLOGIES”: SOCIOTECHNICAL IMAGINARIES IN TURKEY AND THE PRODUCTION OF TECHNO-FUTURES

Merve Birdal (Technical University of Munich) Zinaida Vasilyeva (Department of STS, School of Social Sciences and Technology, Technical University of Munich)

This paper explores the epistemic and performative shifts in the manifestations of technologies and technopolitics in contemporary Turkey. Building on the discourse analysis of Turkey’s technology policies and mass media, including news, publicly available videos, and official speeches, we will demonstrate how national imaginaries of desirable techno-scientific futures evolved since the beginning of the 2000s to date and how these transformations are informed by local narratives of technologies, collective expectations, and global geopolitics.
Our particular focus will be on the discourse of “indigenous and national technologies”, which became a dominant narrative in the late 2010s, particularly in relation to defence technologies (e.g. unmanned aerial vehicles), and signalled a new era in Turkey’s science and technology politics. Contrary to the previous period characterized by the rapprochement between Turkey and the EU, when technologies were framed as universal means to “attain the level of contemporary civilizations”, the new narrative of “indigenous and national technologies” emphasized Turkey’s technopolitical sovereignty, local and national character of technologies and techno-scientific futures. Using Jasanoff’s concepts of “co-production” (Jasanoff 2004) and “sociotechnical imaginaries” (Jasanoff and Kim 2009), we analyse relations between technologies, narratives of the local/national, (geo)politics, and visions of the futures, as closely intertwined and co-productive of national and global technopolitical orders.

Room N113 - Panel 044 MEANINGFUL HUMAN CONTROL? SOCIOTECHNICAL IMAGINATIONS OF AI, DRONE SWARMS AND THE FUTURE OF WARFARE

Session 2

971 DRONE WARFARE, DATA ANALYTICS AND THE RATIONALITY OF AI DEFENSE INTELLECTUALS

Weber Jutta (Paderborn University)

Silicon Valley‘s Intelligensia reiteratingly claims that AI-based warfare is not only ‚cleaner‘ and more precise than traditional warfare but also key to US military supremacy. It allows i.a. the preemptive identification of possible targets through data analytics and minimizes the fog of war by providing a 24/7 real-time, close-up view of the battlefield. These and similar arguments have been outlined i.a. by Ex-Google CEO Eric Schmidt and colleagues in the final report of the National Security Commission on Artificial Intelligence. And though there is some advance in targeting objects technically, the precision rhetorics silences the fact that the production of future targets through data analytics itself is thoroughly messy and unreliable and that the toll of civilian deaths in already in tele-operated drone warefare is enormous.
In my contribution, I want to reread the drone warfare imaginaries of today‘s AI Intelligensia with the help of Carol Cohn (1987) and other feminist critique of the pseudo-objective technostrategic discourse of defense intellectuals as well as work towards an ‚alternative vision of possible futures‘.

116 “AUTONOMOUS WEAPONS” AS A GEOPOLITICAL SIGNIFIER: ANALYSING AI IMAGINARIES IN CHINESE AND US MILITARY POLICIES

Thomas Christian Bächle (Humboldt Institute for Internet and Society Berlin) Jascha Bareis (Karlsruhe Institute of Technology)

“Autonomous Weapon Systems” (AWS) have been subject to intense discussions for years. Numerous political, academic and legal actors are debating their consequences, with many calling for strict regulation or even a global ban. Surprisingly, it remains often unclear which technologies the term AWS refers to and also in what sense these systems can be characterised as autonomous at all. Weapons that are completely self-governing and beyond human control and for this reason feared by many are more of a conceptual possibility than an actual military reality.
As will be argued, the conflicting interpretations of AWS are to a large extent the result of the diverse meanings that are constructed in political discourses. They convert specific understandings of AI into strategic assets and as a consequence hinder the establishment of common ethical standards and legal regulations. In particular, the presentation looks at the publicly available military AI strategies and position papers by China and the United States, understood as evoking sociotechnical imaginaries, and analyses how this technology is politicised to serve particular national roles and interests.
The current theoretical debate aims at finding a functional definition of AWS that is sufficiently unambiguous for regulatory or practical military contexts. Approaching AWS as a particular sociotechnical imaginary, however, it becomes obvious how nation states portray themselves as part of a global AI race, competing over economic, military and geopolitical advantages. This especially holds true for China and the United States, since they are regarded and regard themselves as hegemonic antagonists, presenting competing self-conceptions that are apparent in their histories, political doctrines and identities. The way they showcase their AI-driven military prowess indicates an ambivalent rhetoric of legal sobriety, tech-regulation and national dominance. AWS take the role of signifiers that are employed to foster political legitimacy or to spark deliberate confusion and deterrence.

38 ‘THIS IS NOT WHAT I EXPECTED’. SOCIOTECHNICAL IMAGINARIES AND DISILLUSIONMENT. AN EXPLORATION OF MORAL EXPERIENCE AND MATERIALITY IN A MILITARY INNOVATION CONTEXT

Sofie van der Maarel (Radboud University and Netherlands Defence Academy)

This paper focuses on moral experience and materiality in an innovation context. Whereas most innovation studies focus on optimization and process management, this study investigates the relations between sociotechnical change through innovation, and how people experience meaning and purpose in their work throughout this change. Through an ethnographic fieldwork study with participant observation and in-depth interviews, I analyzed the everyday practices in an ‘innovation unit’ at the Dutch military organization. In this unit, sociotechnical change is designed and tested with technologies such as artificial intelligence and robotics. Everyday practices in the unit evolve around the co-production of ‘sociotechnical imaginaries’. Despite a shared imaginary of an ‘innovative military future’, there are conflicting perceptions, expectations and experiences on what technological innovation looks like, between military personnel at the policy level, the strategic level and the operational level of the innovation unit. Focusing on moral experience at the operational level of the unit, feelings of disappointment and frustration were leading topics in interviews. I argue that these feelings are exemplary of deeper sentiments of loss of meaning and purpose. As a result of conflicting perceptions, expectations and experiences, the military personnel slowly lose their faith in the imaginary. Therefore, their everyday practices

become meaningless and purposeless – they no longer feel as if contributing to an 'innovative military future'. This process is described as 'disillusionment', which is a moral experience characterized by a value conflict between personal and professional values. It has a temporal and disruptive character, and could further develop into more severe symptoms of moral disorientation or moral injury if not being taken seriously by the organization. This paper integrates a focus on moral experience; materiality; sociotechnical imaginaries; sociotechnical change; (conflicting) perceptions on technological innovation.

112 IMAGINING HUMAN CONTROL OVER ROBOTS: HOW FUTURE VISIONS SHAPE THE INTERPLAY OF AUTONOMOUS WEAPON SYSTEMS AND ARMS CONTROL PROCESSES

Anna-Katharina Ferl (Peace Research Institute Frankfurt)

Technological developments that enable increasing autonomy in weapons systems are one of the most frequently cited future threats for international security. Unlike most technological developments with potential military usage, a political process to preventively regulate autonomous weapon systems (AWS) has been taking place for some time now. The scholarly examination of this process has so far mainly revolved around the potential legal, ethical, and strategic impacts of these technological developments. Less light has been shed on the question of how actors involved in the arms control process make sense of, and create meaning in these emerging weapons technologies. Since AWS are considered future military technologies, policymakers, advocates, and researchers have to rely on visions of the future to make the potential impacts of these emerging technologies on international security intelligible. Yet, these visions are not only related to potential future impacts but also tell us something about the possibilities and limitations of political processes today in finding regulatory measures for tomorrow's challenges. To analyze how actors make sense and create meaning of future weapons technologies, this paper draws on the growing research on the STS and critical security studies, and deploys the concept of (sociotechnical) imaginaries (see, i.e. Jasanoff 2015). This contribution argues that imaginaries of the future facilitate or hinder options for political regulation and arms control of AWS in the present. Most importantly, they influence ideas and modes of human control over these weapon systems. This also allows us to make sense of contested and competing imaginaries and narratives around the codification of 'human control' over the use of force into IHL or an arms control regime. This paper aims at empirically retracing the making of arms control as a site for negotiating contested imaginaries and understandings of human control over AWS as politics of technoscientific futures.

321 TAMING DRONE IMAGINARIES: FROM DIY EXPERIMENTATION TO IMAGINARIES OF PROFESSIONAL DRONE USES

Hendrik Bender (University of Siegen - Collaborative Research Center 1187 "Media of Cooperation") Marcus Burkhardt (University of Siegen - Collaborative Research Center 1187 "Media of Cooperation")

A decade ago the first ready-to-fly drones entered the consumer market thereby opening up a space of experimentation exploring the seemingly unlimited uses of such unmanned flying vehicles: Drones were imagined as well as given trial as toys, flying waiters, pizza deliverers, programming platforms, or simply as airborne cameras. While technology enthusiasts spoke of a "demilitarization and democratization" of the drone, others feared a misuse of this "new" technology and saw a danger to privacy in the built-in sensor technology.
Accompanied by the emergence of deep learning in the field of artificial intelligence the DIY character of early drone practices was supplanted by imaginaries of drones as ubiquitous autonomous platforms for data collection and processing as well as transport. Throughout the past decade the focus, thus, shifted towards professional applications of drones that are anticipated to have far-reaching economic as well as social impact in areas like logistics, disaster response, public safety, and agriculture. In this context, drone practices and their technological implementation became inextricably linked with utopian and dystopian imaginaries of an "age of the drones".
This paper examines how imaginaries have changed as non-military drone practices have become more stabilized and professionalized in recent years. Methodologically, the study is based on a qualitative content analysis of selected DIY tech blogs, trade magazines, newspapers, and published political statements which deal with the possible uses and dangers of drones. The paper shows that in the tension between the regulation of recreational drone practices and the simultaneous facilitation of professional applications the initial wild imaginaries are undergoing an increasing taming and closure. In doing so, the paper contributes to an understanding of how DIY as well as corporate and professional imaginaries are formed, stabilized and tamed, both in relation to and in distinction from the military use of unmanned aerial systems.

Room N112 - Panel 045 PRACTICES AND POLITICS OF DIGITALIZATION: WORK AND ORGANIZATION IN STS

Attila Bruni (University of Trento)
Brit Ross Winthereik (IT University of Copenhagen)

Issues of work and organization have always been at the core of STS. Concentrating on laboratories, research centers, innovation processes, centers of coordination, medical settings and other organizational contexts characterized by technologically dense practices, STS have put under scrutiny the role played by technologies, physical and virtual architectures, material and information infrastructures.

Nowadays, as the digitalization of tasks increases and the automation of processes surrounds many jobs, the spatial boundaries and temporal dimensions of work and organization have become fuzzier, the materiality of work seem to disappear, and “work” and “organization” themselves appear as increasingly evanescent concepts.
This track invites researchers to present work on the digitalization of the workplace and on automation of work and organizational processes. Of special interest are research papers that offer a conceptual contribution to STS-research on work and organization in ways that grow out of empirical description and analysis of empirical observation. A concern we are seeking to address through this panel is whether the field’s interest in work and organization is dwindling and whether this may be due to a situation in which digital technologies obscure boundaries and ‘recognizability’ of work and organizing practices. In particular, we are interested in:
- the ways digital technologies (artificial intelligence systems, algorithms, information infrastructures, software and online platforms) support, automatize, disturb and reorient work and organizing practices;

- the different modalities of work and organization allowed for or hindered by digital technologies;
- work and organizing practices lurking behind the functioning of digital technologies;
- the mingling of digital and organizational processes;
- imaginaries of ‘the future of work’ and the forms of labor such imaginaries entail or take for granted;
- analyses of what counts as “work” and “organization” in increasingly digitalized contexts;
- collateral and hidden dimensions of the use of digital technologies in work and organizations;
- the politics and the power dynamics surrounding digitalization processes in work and organizations;
- innovative methods and concepts with which to study and understand digitalized work and organizations.

Contributions inquiring into the theoretical, analytical and methodological resources we have in STS to tackle ongoing digitalization and automatization process in work and organization processes are all welcomed, as are alternative forms of presentation.

Session 1

169 WHEN INNOVATION MEETS APATHY: TRANSFORMING WORK THROUGH THE PLATFORM BUSINESS MODEL

Konstantinos Floros (IT University of Copenhagen)

The worldwide proliferation of platform mediated work in the past decade -be this remote online or geographically tethered gig-work- has produced a growing body of literature on the gig-economy and the future of work. The digitalization of the workplace and its algorithmic management have been a common research focus for both supporters and critics of this organizational model (Parker et al. 2016, Wood et al. 2019). This paper claims that it is not only the affordances of digital platforms that reshape work due to e.g., the performativity of rating systems, the complexity of opaque algorithms and the “workforce-as-a-service” model (van Doorn 2017). Investigating the employment practices deriving from platform work, the paper draws on empirical fieldwork on housecleaning platforms in Denmark to claim the existence of a trilateral sustainment of apathy towards technology-driven shifts in traditional employment relations. First, platform housecleaners are working without challenging the ills of their employment (lack of pension schemes, holiday pay, entitlement to benefits etc.), apathetically enduring the way the platform economy has been imposed on the labor market. Second, the Danish state and stakeholders have demonstrated an apathetic behavior towards swiftly regulating the platform labor market and aligning it to the Danish business model. Third, customers using platform housecleaning are usually indifferent as to how such low prices are available to them. This paper aspires to empirically trace the generators of this trilateral apathy which sustains underprivileged employment conditions for platform housecleaners and conceptualize apathy (cf. Lertzman 2013) as a driving force for the establishment of the platform business model. Studying platform-related labor transformations through the lens of apathy can enhance the understanding of their derivation by avoiding the pitfall of technological determinism.

999 THINKING OF TOOLS POWERED BY ALGORITHMS AND THEIR INTERFACES AS ARTIFACTS FOR THE CREATION OF PARTIAL ORGANIZATION

Rocío Fonseca Sasian (Humboldt Universität zu Berlin)

There is an incessant increase in the development and adoption of tools powered by algorithms to assist decision-making processes in all forms of formal organizations. While STS theoretical frameworks help illuminate the socio-material entanglements which stabilize the use and design of these technologies, these theories do not allow us a great degree of clarity when analyzing the potential disruptions, reorientation, or homogenization of work and organization practices. To answer the question of how the design of software tools is capable of reframing or reinforcing certain practices within a particular organizational setting or across an entire field, I suggest introducing into the STS framework the analytical distinctions made by Ahrne and Brunsson (2011), which distinguishes network, institutional and organizational effects and allows us to see organization outside and among organizations.
I propose thinking of algorithmic tools as artifacts for creating partial organization, capable of generating organizational effects within social fields. This means that these tools can support the adherence to rules within organizations and among organizations, reshaping or increasing the rigidity of working practices. Furthermore, software can work as means to contest a given order by creating new standards or metrics and making particular problems or criteria more visible among organizations in a given field. To illustrate the potential of this conceptual toolkit, I draw on an example from interview material with software developers and the analysis of the interface of one tool designed to assist the peer-review process of biomedical journals. I show how the design of the interface is meant to change the working flow of journals and enhance particular evaluation criteria. Lastly, this tool also nudges submitting authors to change their writing and reporting practices in order to adhere to the software's standards.
Ahrne, & Brunsson (2011). Organization outside organizations: the significance of partial organization, in Organization.

183 DIGITAL PLATFORMS, ALGORITHMIC DEVICES AND WORKFORCE MANAGEMENT

Federico De Stavola (Universidad Nacional Autónoma de México)

The study of Latin American platforms highlights key aspects of the interaction between these highly versatile digital infrastructures and the socio-political-subjective context of installation. Latin American historical-structural (Marini, 1973; Quijano, 1973) development has made the 'willingness' of the working class to “make do” more the norm than the exception (Antunes, 2018), especially in the vast urban informal sector. This involuntary condition mobilizes a series of calculations, practices, strategies, jobs and micro-entrepreneurial activities in a self-activation and "vitalist pragmatics" (Gago, 2014) that the platform subsumes by organizing and reformulating them (Abílio, 2017). The digital infrastructure that enables this subsumption is composed, among other things, of a series of technological devices that form an architecture of power that forces the subject within a space of functional self-management of labour that is completely directed and designed by capital.
The paper will propose an analysis, carried out in Mexico City and Buenos Aires, of a Colombian food delivery platform, focusing on the disciplinary, governmental and technological devices, with Foucault lens, that attempt to structure a micro-entrepreneurial fantasy based on the theory of human capital, as well as to subjectify the worker, without fully succeeding, in the direction of a functional labour autonomy (De Stavola, 2021) – “be your own boss”. The control allowed by GPS, the design of the platform, the gamification elements, an algorithmic rationality and a marked neo-liberal ideology, allow in a renewed form a management of the workforce that conceals the heterodirected command of capital, despite being increasingly pervasive. I will therefore be presenting a latin american case study that speaks to the globality of digital labour management.
The study of digital platforms requires that the STS engage in a strong dialogue with the Studies of Management and Organization and bring technological innovations back within the antagonism inherent to capitalist production.

482 ABOUT THE ROLE(S) OF ALGORITHMS IN ORGANIZATIONAL AND WORK PRACTICES. NOTES FROM AN ENACTIVE ETHNOGRAPHY OF FOOD-DELIVERY RIDERS

Francesco Bonifacio, Catholic University, Milan

Platforms and algorithms are two protagonists of the processes of digitalization of work. In a debate characterized predominantly by critical approaches, the research has mainly stressed the disciplining function of the algorithmic management, addressing the dichotomic relation between platform and workers as conflictual in nature. Despite its merits, this perspective denotes a rough understanding of the “roles” played by algorithms in work and organizational practices. Drawing on a 7-months enactive ethnography (Wacquant, 2015) of food-delivery riders, based in Milan, this paper shows how a relational and situated understanding of platforms and algorithms may contribute on traditional issues such as power and learning.
1) In organizational terms, platforms play an “infrastructural role”. They co-opt customers, workers and restaurants, coordinating them in space and time by virtue of the algorithms “calculative agency”. However, such coordination does not imply a smooth automation of organizational practices. Assigning each of them of a different degree of “coercive flexibility” (Richardson 2020, p.11), the platform keeps a centralized power, while decentring the labour process control on clients and restaurants. Thus, rather than disappearing, conflicts arise in and through interactions between the agents involved, both inside and outside of the platform.
2) A different issue concerns what it means working with algorithms. By the workers point of view, algorithms play the role of “resources” that are (variously) used and appropriated in the work-practice. In this regard, rather than deskilling workers, digital technologies are observed asking them a surplus of competences of various kinds. However, as skills are strategically neglected on an organizational level, their (uneven) possession ends differentiating workers in symbolic and material terms.

Definitely, the role(s) played by digital technologies – and the issues they involve – depend also on how researchers frame them. Eventually, such analytical choices involve methodological issues that this paper aims to address.

555 CONFIGURING DATA MATCHING: COPING WITH UNCERTAIN DATA IN MIGRATION AND SECURITY

Wouter Van Rossem (University of Twente, The Netherlands)

Data matching technologies are increasingly used in the nexus between migration, borders, and security. For example, to detect identity fraud by linking identities across national and international policing systems, or to match flight passengers' personal data against government watch lists. At the same time, databases inevitably contain data that are not accurate, not complete, or even contain data that are duplicate entries. In the case of migration and border control, the stakes for making decisions on the basis of such data can be exceptionally high as data quality problems may affect the rights of the persons affected. For example, by being wrongly suspected of identity fraud due to banal data entry errors. While authorities have eagerly adopted data matching technologies to cope with the inherent uncertainties and ambiguities in data, little is known about the effects of such technologies on everyday bureaucratic practices of migration and border security. This article draws from fieldwork conducted on the design and use of a technology for searching and matching migrants' data at the government agency implementing the policy on foreign nationals in The Netherlands. Following research on the designer-user-technology nexus and its role in supporting collaborative work, findings emphasize the mutual constitution of devices and work practices of identification. In this way, dealing with uncertain data in migration control has become immanent in the densely interwoven arrangements of devices and practices of security. The research thus contributes to a growing area of research that empirically investigates security through practices and devices by advancing the understanding of the practices and technologies for matching personal data.

611 MAKING CASES COUNT – DISENTANGLING HYBRID PRACTICES OF COUNTING CASES IN GERMAN

Gall Korbinian (Leibniz Universität Hannover) Büchner Stefanie (Leibniz Universität Hannover) Rahn Justus (Leibniz Universität Hannover)

This talk discusses the counting of cases in youth welfare offices as a hybrid practice. Based on ethnographic fieldwork, we show how social workers, as “organized professionals” (Noordegraaf 2007), regularly set up hybrid settings using various digital and non-digital materials for sorting out what cases are actually “there”. This process of taking stock seems surprising at first glance, but it reflects the often diffuse, open-ended, and in part heavily regulated nature of casework in social services. In this setting of “counting cases”, digitally provided lists, printed lists, institutionalized practices, and the organization become rearranged and synchronized.
In the youth welfare context, this is necessary because the constant dealing with different attention demands of sometimes over 100 cases per team member, representing different personal fates, makes it impossible for social workers to cope with all cases simultaneously. The organizational routines they develop make it possible for them to focus on acute cases and “save” the rest, distributed in their digital infrastructure. This means that “inactive” cases vanish from day-to-day work.
The counting of cases as a hybrid set of practices, of identifying and sorting out cases, illustrates how professional and organizational logics are increasingly intertwined in reflecting about “active”, “inactive” or “semi-active” cases, depending on the logics and media involved in counting cases. We therefore draw on data from a multi-sided ethnographic study of various German youth welfare offices (2020-2022), including interviews, method of thinking aloud (Eccles und Arsal 2017) and following actors through communicative and software-based contexts (e.g. Bruni 2005).

Room N110 - Panel 049 THEORISING INTERFACES / INTERFACE THEORIES

Session 2

946 CLIMATE SOCIALIZATION IN TIMES OF CRISIS – A COMPARATIVE STUDY OF ARGUMENTATIVE EMOTION WORK AND TIME WORK IN CLIMATE CHANGE DISCOURSES
Monica Marin (University of Bucharest) Cosima Rughiniș (University of Bucharest)

Is the doomsday clock really set at one minute to midnight? Are we casually, passively living our last days on a planet on the brink of environmental chaos and destruction? Or is climate crisis just one of those blatant exaggerations? Are we urged to act where there is no urgency, are we pushed to despair when there is no cause for desperation?
This paper examines emotion work and feeling rules (Hochschild, 1979) as infrastructures for knowledge and learning in two types of discourses on climate change. To do that, we look closely at recent articles about climate change from two popular English-language magazines: Vice and The American Spectator. We identify a typology of discourse configurations based firstly on argumentative emotion work (Hochschild, 1979) and secondly, on argumentative time work (Flaherty, 2003; Ciocănel, Rughiniș and Flaherty, 2021) and ensuing calls-to-action.
How do people translate and interiorize the climate change discourses into something that is emotionally acceptable for them? What are the affective configurations that sustain learning and acting in a period marked by intense debates on the climate crisis? Our typology may contribute to a better understanding of climate communication, opening a space for a nuanced positioning of affective and temporal argumentative strategies.
We thus propose a novel instrument for orientation in a seemingly never-ending carrousel of acceptance and denial models, stories, and analogies that shape the way we think, feel and act about climate change.

275 SOCIOTECHNICAL FUTURES VS UNCERTAINTY : THE POLITICAL USES OF FRENCH ECONOMIC FORECASTS IN TIME OF CRISIS.
Régniez Théo (Université Paris Dauphine - PSL)

The French economic planning developed after the Second World War has resulted in the construction of a state expertise on economic futures. Since 1980s and the inability of forecasters to describe and analyse economic fluctuations of the 1970s, the construction of economic futures has taken a new way with the apparition of rival expertise coming from the private sector and independant institutes. Based on macroeconometric modelling, economic forecasts provide information on the economic evolution of the economy and its different sectors (Evans, 1997). Such constructed futures are essential to policy making and can even be a constraint in as much as forecasts limit sometimes the field of possibilities for State expenses (Angeletti, 2021). But, the multiplication of actors in the field of economic forecasting has not lead to more accurate forecasts. Between science and politics, forecasters are struggling against an ruthless uncertainty.
Drawing on an ethnography of a French forecasting institute during the Covid19 crisis and interviews about the Subrimes crisis in France, I would like to argue in this conference that forecasters are plainly aware of the high probability of failure even if they use complexe sociotechnical instruments and try to work with other « science of prediction » (Wenger et al., 2020).
If the production of the sociotechnical future is an important point, it seems at least as important to study the circulation and transformation of sociotechnical futures over time to understand why some instruments are progressivly discarded. My contribution aims at describing effects of failure and errors, especially in time of crisis, on economic policy instruments oriented toward the future. Paradoxically, when crisis occur, forecasters are directly put in front of the public scene, independantly of past errors. The political need for crisis talks seems to give temporarly their credibility back to forecasts modelling.

84 CONTEXTING CRISIS: UNDERSTANDING CRISIS AS A TEMPORAL PHENOMENON IN PRACTICE, THROUGH THE CASE OF YACHAY THE CITY OF KNOWLEDGE IN ECUADOR.
José David Gómez Urrego (KALEIDOS)

On March 2017 Ecuador's presidential elections were one week away, and the country had to decide whether to maintain the socio-political project spearheaded by Rafael Correa who had a 10-year government at the time, or opt for an abrupt political change towards the right. In this presentation, I describe how the electoral climate influenced, and was influenced by, the dynamics in Yachay the city of knowledge, the biggest and most controversial infrastructural project in the history of the country. Later, the onus of the analysis sets on the contexting practices used by Lenin Moreno and his allies to break with the previous government and to declare a national crisis while mobilizing austerity-oriented changes across the public sector. In this setting, Yachay portrayed both as a symbol of the “pretentious failures” of the previous government, hence a justification for the crisis narrative, and as a site for the reforms to be applied and widely publicized. The presentation critically analyses both the idea of contexts as an external neutral reality and the context of crisis in particular. Drawing on evidence observed in Yachay and interviews with other public officials from other areas of the state during 18 months, the presentation uses the concept of contexting as a way to capture the shaping of contexts and their relation with expectations. The presentation provides evidence of how this has worked in Ecuador's government

and how Yachay both influenced and was influenced by the context of crisis. The analyses of context, temporalities and crisis offers a reading of Yachay and wider socio technical politics that is often missing in STS, especially in settings beyond North America and central Europe.

Room N117 - Panel 051. METHODOLOGICAL EXPERIMENTS IN STS: EXPLORING DIGITAL AND (QUALI-)QUANTITATIVE METHODS

Judit Varga (Centre for Science and Technology Studies (CWTS), Leiden University) Maximilian Fochler (Department of Science and Technology Studies, University of Vienna) Sarah Rose Bieszczad (Centre for Science and Technology Studies (CWTS), Leiden University)
Ismael Rafols (Centre for Science and Technology Studies (CWTS), Leiden University) Sarah de Rijcke (Centre for Science and Technology Studies (CWTS), Leiden University)

Digital data, digital platforms and computational methods saturate knowledge practices that inform or constitute the imaginaries and infrastructures of our future. Examples include diversifying data about scientific practices (including scientometric, altmetric and webometric traces); online traces of collective discussions and commercial practices; and a growing range of digital platforms that coordinate environmental and socio-economic data, such as ongoing efforts by the European Union to create a digital twin of the ocean. Engaging with digital and computational ways of knowing is crucial for STS to study or intervene in them.

This panel invites contributions that attempt or reflect on methodological experimentation and innovation in STS by combining STS concepts or qualitative, interpretative methods with digital, quantitative and computational methods, such as quali-quantitative research. Over the past decade, STS scholars have increasingly benefited from digital methods, drawing on new media studies and design disciplines, among others. In addition, recently scholars also called for creating new dialogues between STS and QSS, which have increasingly grown apart since the 1980s. Although the delineation of STS methods from neighbouring fields may be arbitrary, delineation can help articulate methodological differences, which in turn can help innovate and experiment with STS methods at the borders with other disciplines.

We invite contributions that engage with the following questions. What do we learn if we try to develop digital and computational STS research methods by articulating and bridging disciplinary divisions? In what instances is it helpful to draw boundaries between STS and digital and computational methods, for whom and why? On the contrary, how can STS benefit from not drawing such boundaries? How can we innovate STS methods to help trace hybrid and diverse actors, relations, and practices, using digital and computational methods? How can methodological innovation and experimentation with digital and computational methods help reach STS aspirations, or how might it hinder or alter them? What challenges do we face when we seek to innovate and experiment with digital and computational methods in STS? In what ways are such methodological reflection and innovation in STS relevant at a time of socio-ecological crises?

Session 1

621 TRACING THE DEVELOPMENT OF SOIL CARBON RESEARCH. AN EXPERIMENTAL MIXED-METHODS APPROACH

Lisa Sigl (University of Vienna) Ruth Falkenberg (University of Vienna) Maximilian Fochler (University of Vienna) Thed van Leeuwen (Leiden University)

The public perception of the societal and environmental relevance of soil has strongly increased over the last two decades. In parallel to this, research on soil has diversified, as soil-related processes are increasingly considered as relevant beyond soil science, for example in ecology or ecosystem science, and new methods have allowed studying soils differently (e.g., metagenomics have opened new perspectives on soil microbes). In the recent past, soil researchers increasingly call for integrating different kinds of soil-related research for being able to respond to current socio-environmental problems.
In this paper, we ask how research on a particular soil-related topic (i.e., soil carbon/soil organic matter) has changed in this regard, e.g. whether clusters of research have developed over time, in relation to which other topics and socio-environmental problems, and how scientists from different disciplines have collaborated around the topic.
To address this, we experiment with a combination of qualitative and quantitative methods. On the one hand, we draw on qualitative interviews with soil researchers that reflect the history and development of their field, on how changing articulations of relevance have been co-produced with new epistemic approaches, and on the development of research on soil carbon in particular. On the other hand, we conduct a bibliometric analysis of papers published on the topic of soil carbon in the past 25 years.
We will reflect how the data created by the qualitative and quantitative approaches relate to each other, how they overlap, but also how their combination offers a novel perspective on the development of an epistemic field in changing contexts of societal relevance.

517 OF NETWORKS AND TOPICS: COMBINING QUANTITATIVE AND QUALITATIVE METHODS IN ANALYSING MODELLING COMMUNITIES AND DISCOURSES

Anja Bauer (University Klagenfurt, Department of Science, Technology and Society Studies) Leo Capari (Institute of Technology Assessment, Austrian Academy of Sciences) Daniela Fuchs (Institute of Technology Assessment, Austrian Academy of Sciences) Titus Udres (Institute of Technology Assessment, Austrian Academy of Sciences)

Bibliometric and automatic text analyses have become powerful tools to analyse an ever-growing scientific canon in regards to scientific networks, thematic clusters and respective changes over time. But can they also serve STS interests in in-depth analyses of scientific communities, practices, and narratives?
In this presentation, we reflect on the insights from a research project on the epistemic practices and the socio-political roles of computational modelling in energy transition, trade policy and nano risk assessment. We employed a range of bibliometric analyses (e.g., citation analyses, co-authorship, biographic coupling) and text mining approaches (co-occurrence analysis, topic modelling). These analyses helped us explore the structural, institutional, and personal constitutions of the modelling communities and identify the main modelling approaches and their relations to particular scientific and socio-political issues. Yet, the research design also proved challenging, particularly regarding the construction of highly-specific corpora (with ambiguous wording such as 'model'). While more time-consuming than anticipated, the researchers successively developed expertise and interpretative capabilities on the issues under investigation while developing the search string and parameters.
Clearly, quantitative analyses do not speak for themselves but require a lot of interpretative efforts. Here, combining qualitative text analysis and expert interviews proved fruitful. The close reading of key articles provided in-depth insights on how policy issues are raised, adopted, and transformed in modelling exercises. Moreover, quantitative analyses, notably the term map, offered an innovative way to structure expert interviews which validated our analyses and added to the interpretation. We conclude that bibliometric methods combined with qualitative methods offer opportunities for STS and related fields, such as Technology Assessment, to capture the relevant structures and discourses in emerging research fields. Yet, sufficient attention should be given to the preparatory steps (such as corpus construction), the sensitivity of settings in easy-to-apply tools and the interpretation of analyses.

95 UNDERSTANDING DATA STUDIES: A CONCEPTUAL AND METHODOLOGICAL INQUIRY INTO RESEARCH ON DATAFICATION

Irina Zakharova (Centre for Media, Communication and Information Research (ZeMKI) & Institute for Information Management (ifib) at the University of Bremen)

Data politics and how they are enacted in datafication processes of "translating everything under the sun in a data format" (van Dijck 2017) is a key concern of the interdisciplinary field of data studies. In this field, multiple concepts about datafication are produced relevant for understanding and imagining technoscientific futures. These concepts are grounded in various disciplinary, theoretical, epistemological, and methodological approaches to studying datafication. As Haraway (2016) reminds us, however, "[i]t matters what matters we use to think other matters with" (p.12). In relation to data studies, it means that a conceptual and methodological reflection of the field is needed.
My contribution aims to provide such a reflection. I expand on the methodological debates of the double social lives of methods (Ruppert et al. 2013) and the concept of methods' performativity (Barad 2007) by applying the notion of methods assemblage (Law 2004)—human and non-human elements of research process held together through research practices.
I report results of a quantitative and qualitative literature analysis of 51 empirical research articles about datafication published between 2015-2019 and of expert interviews with 32 datafication scholars at different career stages. I inductively develop three methods assemblages applied in data studies. These methods assemblages are distinctive in relation to what 'datafication' means empirically, kinds of knowledges sought by researchers applying them, extent of collectivity of addressed actors, and these actors' positioning in datafication processes between the poles of data use/production. These methods assemblages can be applied for 1) exploring encounters with data representations, 2) tracing dynamics of data movement, and 3) reconstructing datafied regimes.
I argue that these methods assemblages allow a methodological and conceptual mapping of the field of data studies and provide it with additional vocabulary sensitive to ontological multiplicities (Mol 2002) and technoscientific politics of ongoing and future datafication processes.

622 REFLECTING ON THE PRACTICE OF QUALI-QUANTITATIVE SCIENCE STUDIES AT THE STS-QSS INTERFACE

Judit Varga (CWTS, Leiden University)

This talk will reflect on the practice of combining methods and concepts from science and technology studies (STS) with computational methods popular in quantitative science studies (QSS) through experiences from two projects: exploring computational social research, and studying marine social science. It illustrates the iterative development of methods in light of increasing domain knowledge about the cases. In particular, it reflects on the value of emphasizing resonances or differences among units enacted through STS concepts and computational methods.

Whilst acknowledging the shared aspirations and origins of STS and QSS or scientometrics, noting their separation helps explore the above similarities and differences. Quali-quantitative science studies at the STS-QSS interface can aim to align their analytical units or let each method enact the research object in unique ways. Overemphasizing similarities poses risks to creating knowledge that acknowledges uncertainty, whilst overemphasizing difference precludes dialogue.

My PhD studied how approaches in computational social research develop by iterating computational research, interviews and participant observation. In many instances, methods and findings converged. Whilst this helped me learn a quali-quantitative skill set and write a monograph required by my department, I worried that convergence would lead to confirmation bias, and obscure other, relevant knowledge about my case study. Thus, in later stages, I diversified computational analyses to highlight alternative research units.

I study marine social science as part of my postdoctoral research. Drawing on the notion ‘qualculation’, I explore the value of creating marine social science as a unit. Through document analysis and interviews, I study how and why marine scientists align various epistemic communities into the ‘space’ of marine social science. Likewise, I argue that computational methods help create marine social science. Rather than aligning these approaches to creating marine social science, I ask whether computational qualculations can help explore the values of marine scientists’ qualculations.

Room N111 - Panel 059 ARTIFICIAL INTELLIGENCE CONTROVERSIES

Session 3

910 FAKE AI AND COMPOSING ALGORITHMS

David Moats (University of Helsinki)

A recent book called Fake AI (Kaltheuner 2021) notes that the current hype around Artificial Intelligence has been accompanied by a sharp increase in the amount of snake oil and miss-sold AI products. This ranges from the common practice of referring to any and all automation or simple algorithms as “AI”, but also includes products which do not pass widely agreed statistical tests of accuracy, or which draw on questionable training data. Yet while the examples raised in the book are extreme and appear to be clear cut, parsing ‘real’ from ‘fake’ AI is no simple task. As Steve Woolgar recently argues in relation to Google Deep Mind’s recent Go victory (forthcoming 2022), determining what AI is capable of, or what properties or agencies are assigned to AI in a given scenario, is never easy to settle.

This paper draws on recent work by the author and others about 'imposters' (Woolgar et al. 2021) to argue that controversies about 'fake' AI, like naturally-occurring breaching experiments, can help unearth assumptions about what AI should be used for as well as assumptions about the human decision-making which it is meant to replace/supplement. However, we must also attend to how 'fake' AI’s might be involved in upholding, undermining or even transforming the social relations and values they transgress.
I will briefly analyse a handful of popular controversies over fake AI and contrast these with one left-field case, that of Irish composer and musician Jennifer Walshe who, in 2019, performed a piece called “IS IT COOL TO TRY HARD NOW?” composed using 7 different neural networks… except that it wasn’t. Her mischievous intervention both provokes and unsettles norms about the way agency and authorship is distributed and, I argue, gives us tools for thinking otherwise about the purpose of AI more generally.

434 MATERIALIZING AI IN PUBLIC HEALTHCARE PRACTICES. HOW DOES NEOLIBERALISM COLONIZE DAILY DECISION-MAKING PROCESSES?

Núria Vallès-Peris (Barcelona Science and Technology Studies Group (STS-b), Universitat Autònoma de Barcelona Intelligent Data Science and Artificial Intelligence Research Center (IDEAI-UPC), Universitat Politècnica de Catalunya - BarcelonaTech (Júia Pareto Boada (Institut de Robòtica i Informàtica Industrial, Consejo Superior de Investigaciones Científicas (CSIC)- Universitat Politècnica de Catalunya (UPC) Facultat de Filosofia, Universitat de Barcelona)

During the last decades there has been a growing introduction of big data and algorithmicizing in healthcare, as well as an intense narrative around Artificial Intelligence (AI) and its capacity to improve the outcomes of healthcare systems around the world (clinically, economically and in overall population wellbeing). Digitalization of public health and the imaginary of promises of AI is accompanied by the introduction of new actors (multinational companies, innovation Hubs, startups, etc.) that provide particular services linked with the digitalization, such as design and maintenance of infrastructures, hosting the data or learning for professionals, as many others.
From this landscape, in this paper we present a research on course about the use of big data and ML in citizens’ relation with healthcare services with what during the pandemic has been called “avoid the healthcare system saturation”. By carrying out a case study in primary care centers in Catalonia, we integrate the perspective of STS with philosophy of technology, with the intention of analyzing how the automation of decision-making in primary care centers is materially articulated and sustained in an infrastructure of daily practices among various actors. From this perspective, we go beyond an ethical debate around AI in healthcare that revolves around the data or the human-machine interactions. We propose a relational ethico-political approach to the study of controversies of AI, from materiality and heterogeneity. With this objective, we analyze how criteria of efficiency and precision are gaining relevance and displace other criteria such as equity and well-being, in the multiple mundane decisions and choices occurring in a primary care center. Focusing on the daily practices and the infrastructure of relationships among different actors, new questions emerge about the AI role in processes of decision’ making in public services, thus challenging the democratic nature of such decisions and its criteria.

1035 FUTURE FRICTIONS: AN IMMERSIVE WEB EXPERIENCE TO EXPLORE URBAN AI CONTROVERSIES

Anouk Geenen (University of Twente) Julieta Matos Castaño (University of Twente) Corelia Baibarac-Duignan (University of Twente) Michiel de Lange (Utrecht University)

We present a design intervention to operationalize the theoretical concept of socio-technical controversies, stimulate reflection and debate on urban AI, and allow participants to articulate their own issues and matters of concern. We understand socio-technical controversies as meaningful entry points to discuss abstract concepts at the intersection of (smart) technologies, public values and democratic practices. Our specific contribution to the study of socio-technical controversies is to consider them as contestations about public values. Digital

technologies and platforms challenge those public values (e.g. Van Dijck et al 2018). How can we develop more 'responsible' ways to develop urban AI?
We contextualize our work in smart cities. Smart cities incorporate data-driven practices and urban AI with the promise to optimize city processes and improve urban services, but are highly contested for their tech-driven and top-down nature. Building upon and expanding current approaches in design research and STS, we analyze smart cities as public spaces that can be approached as 'public things' ('res publica'), where citizens ('the public') gather around controversies ('issues') (cf. Latour 2005, Marres 2007, Ehn et al 2014). We use a design approach as design allows for the formation of 'affective bonds that are necessary for the construction of publics' (Le Dantec and DiSalvo 2013: 260), and can 'expose and re-imagine constraints and parameters surrounding issues' (2014: 205).
We present an immersive, interactive web experience entitled 'Future Frictions', that gives participants agency to influence smart city futures. Through relatable future scenarios and interactions with neighbors and passersby, 'Future Frictions' makes participants become acquainted with multiple perspectives and various forms of societal impacts around urban AI. As a result, the experience allows for ambiguity to exist and refrains from a deterministic view on urban AI, thereby stimulating participants to identify and articulate the values and issues that matter to them.

421 ANNE FRANK'S STORY AS A 'COLD CASE': HOW AI BECAME ENTANGLED IN A CONTROVERSY AROUND HISTORICAL RESEARCH

Liesbet Van Zoonen (Erasmus University Rotterdam) Francisca Grommé (Erasmus University Rotterdam)

In January 2022 an international research team lead by a former FBI agent made an announcement after five years of research: they found a new 'main suspect' in the 'cold case' of Anne Frank's betrayal. Among the techniques used in the five-year project was a database compiled of previously scattered archival records. Supported by an artificial intelligence consultancy firm, analysis of this database foregrounded 'new leads'.
Controversy followed in the weeks after initial publication of the book that narrates the research project. Some historians denounced the use of AI and big data as merely a way to attract media attention. In February 2022, the book's publisher cancelled a reprint because of concerns regarding the credibility of the findings.
We present a case study of the controversy following the book's publication to understand the role of AI in the development of the controversy. In doing so we place AI in the context of an ongoing debate in which different methods and expertise have been mobilised over the years to understand Anne Frank's betrayal. In this case AI seems to have become entangled with a 'detective logic' of data collection, analysis, and presentation intended to 'override' previous theories. At the same time, Anne Frank's story is collective heritage and subject to emotional attachments and debates. Consequently, it is likely that existing expertise, sensitivities, convictions and interests have contributed to the current controversy. Drawing on publicly available material such as (social) media and research reports, we ask: how has AI become entangled in this controversy, and (how) has it reshaped it?

Room N115 - Panel 063 PARADOXES AND PUZZLES OF/IN CITIZEN SCIENCE

Michiel Van Oudheusden (KU Leuven)
Louise Elstow (Lancaster University)
Paolo Giardullo (University of Padova)

Citizen science (CS) can be broadly defined as a process in which nonexperts engage in scientific research or data collection with or without the support of science professionals (Irwin 1995; Bonney et al. 2009). Whereas the concept of CS in science is currently in vogue inside and outside science and research (Kulleberg & Kasperowski 2016), it can – and typically does – take on multiple forms, giving rise to tensions, contradictions, paradoxes, and puzzles. For instance, credentialed scientists may mobilize lay citizens to assist with scientific observations and classifications. While this contributory approach to CS is likely to yield valuable scientific data, it risks closing down opportunities to develop a genuine public engagement culture in which citizens and scientists co-create research problems, agendas, and policies. Elsewhere, some scientists engage 'in their free time' in their own research activities. To what extent might the output of these activities be classed as 'Citizen' or 'Professional' science and what impact does this have on what is produced?

The notion of CS itself is paradoxical as it embeds divergent notions of science, citizenship, and democracy (e.g., invited versus self-organized and more politically-laden citizen engagement), which stakeholders must negotiate or 'work out' through exchanges between them. Examples pertain to the language stakeholders use to make sense of mutual engagements (Eitzel et al. 2017), the technologies and material arrangements (e.g., forms of infrastructure) that come into play (Gabrys 2021), the boundaries that are drawn around what counts as CS (Ottinger 2010), and the "data politics" (e.g., a commitment to open data) that shape these data and which can have profound scientific and social implications (Beraldo & Milan 2019).

Recognizing the essentially contested nature of the CS concept and its manifold practices, this panel invites contributions that theorize or empirically explore the different meanings of CS with a specific focus on the tensions, riddles, and paradoxes found in CS theory and practice. It invites panelists to consider these and related questions:

- What are the foundational tensions and paradoxes at the heart of CS?
- Where do we find these tensions and paradoxes?
- How are they sustained, resisted, transformed?
- How should we imagine these tensions and paradoxes?
- What do these paradoxes do – or not do?
- What are better ways of managing or navigating them – and why?
- How will these tensions and paradoxes play out in the future?
- How can rethinking CS contribute to different and perhaps healthier relations between those doing science?
- Can we expect – and should we anticipate – new paradoxes emerging in/from CS in the short and distant future?

Such questions help to open up consideration about the politics of CS and the role of citizens in technoscientific futures, as CS continues to gain traction in the worlds of policy, research, and innovation; and publics continue to engage with science and technology in manifold ways.

Session 1

206 EXTRA-INSTITUTIONAL SCIENCE: A CLOSER LOOK AT COMMUNITY LABORATORIES

A. Verena Eireiner (University of Cambridge)

Do-it-Yourself (DIY) biology's research communities emerge outside, or 'extra to', institutional laboratories of academia, which is why I refer to this type of movement as 'extra-institutional science'. The movement is internet-native, but the evolution of communities is highly country-specific. In Canada, DIY biology raises hopes of a biotech revolution. In Germany, it is associated with a dystopian future of damaging pathogens escaping from the laboratories. Great Britain's approach is rather tolerant, and the country has become the movement's European epicentre. Policymakers, DIY biologists and publics are tasked with negotiating a configuration that is mutually desirable in their specific sociocultural context. This project examines why the boundary-challenging activities of extra-institutional science are so differently perceived and acted-upon. To do so, this project investigates how three different nation states, and their respective DIY communities, imagine themselves through extra-institutional science in keeping with their political cultures, goals and traditions. To this end, I foreground the tension between a controversial, globally networked DIY science movement, and the unique national socio-cultural contexts of implementation. I draw on related work within the field of STS and specifically expand upon Jasanoff's conceptual work on sociotechnical imaginaries. I further draw on Star & Griesemer (1989) to conceptualise local DIY biology community laboratories as boundary objects, enabling me to investigate how DIY laboratories cause collisions across different social worlds, mobilize actors with sometimes divergent visions, thereby providing grounds for negotiation, normalization or rejection.

357 CITIZEN SC-AI-NCE: REFLECTIONS ON EXPERIMENTS TO INTEGRATE AI AND CITIZEN SCIENCE

Nada Akrouh (Erasmus School of Health Policy & Management) Rik Wehrens (Erasmus School of Health Policy & Management) Iris Wallenburg (Erasmus School of Health Policy & Management) Hester van de Bovenkamp (Erasmus School of Health Policy & Management)

Over the past years AI has found its way into citizen science. On platforms like Zooniverse large datasets are being labelled by citizens around the world, of which some are successfully used for machine learning. The requirements for such models, however, do not always neatly align with the principles and aims behind citizen science. Involving citizens in standardized tasks seems quite contradictory to the principles of citizen science, such as creativity, inclusivity, and freedom, in which citizens –together with scientists– choose the aims and goals of the research (Gijsel, Huyse & Hoyweghen, 2019). Involving citizens in the first stages of research may allow for more creativity and human-centered AI that moreover provides insight in the 'black box' of AI applications. Citizen involvement moreover contributes to the aim of 'data for co-liberation' in which co-decision about the use of data is key (D'Ignazio & Klein, 2020).
In this presentation we reflect on research in which we sought to unleash experiential knowledge of citizens, using text-mining, to contribute to patient-centered care. We started with the stories of citizens, using a large dataset of written patient narratives. We experimented with interdisciplinary research combinations that allow for productive combinations of qualitative analysis, citizen engagement and computational methods.
These experiments led to exploratory discussions about useful AI applications, critical reflections on methodology and different interpretative frames with regards to matters such as stigma. While this opened opportunities for mapping relevant topics for a rich and robust understanding of patient experiences, it remains a puzzle about what 'right' ways are for pooling different standpoints of citizens while using AI applications. Our insights contribute to STS as these display ways to approach the controversies (Baibarac-Duignan & de Lange, 2021) that emerge when integrating citizen science and AI.

842 CHALLENGING THE UNDERSTANDING OF ROLES AND OWNERSHIP IN CITIZEN SOCIAL SCIENCE: THE COACT EXPERIENCE

Stefanie Schuerz (Centre for Social Innovation ZSI (Barbara Kieslinger) Centre for Social Innovation ZSI Katja Mayer (Centre for Social Innovation ZSI) Teresa Schäfer (Centre for Social Innovation ZSI)

While citizen science and the participation of non-professional scientists in authentic scientific endeavors is growing in popularity across disciplines, these practices are still mostly associated with natural science. Typically, projects are designed by professional researchers who offer a portfolio of participation to the wider public. Roles and responsibilities tend to be assigned by the project owners, i.e., the scientists. However, participatory research practices also have strong roots in the social sciences, where lay people have long been involved in co-researching their own challenges within their socio-political contexts and contributing to changes in public policies. In the tradition of community-based participatory research and participatory action research, and as part of the H2020 project CoAct, we aim to advance citizen social science as a transdisciplinary research approach and enhance its methodological repertoire.
CoAct addresses global social concerns - including youth employment, mental healthcare, and environmental justice - via local participatory research actions. Local citizen social science research teams consisting of affected citizens, thematic and political stakeholders, and multidisciplinary academic researchers have been established to address the specific concerns and to implement concrete actions and strategies to tackle them. This contribution is based on the experiences collected during the first two years implementing three citizen social science case actions in CoAct, where affected citizens are not only co-researching but also co-evaluating. In this process, key areas of tension were changing and emerging roles, different interests - such as problem solving vs scientific publication output - different expectations and their management, as well as structural contexts impacting feelings of ownership over the project, its processes and outcomes. Nevertheless, we encountered great potential to work with people from all strata of society, including those often underrepresented in citizen science activities, as the topics of concern are related to their own lived experiences.

638 CO-CREATED AND TARGETED COMMUNICATION STRATEGIES CONTRIBUTION TO THE IMPACT AND RECOGNITION OF CITIZEN SCIENCE INITIATIVES

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Citizen Science (CS) can be considered both an aim and enabler, in which citizens participate in scientific research, covering a wide range of topics and through multiple practices. The participation of citizens in CS

initiatives can take place at different levels; so-called co-created initiatives allow for higher levels of involvement, with citizens participating in most, if not in all phases of the knowledge production process. This allows not only producing reliable data, increasing trust in science, promoting a public recognition of both scientists and citizen scientists, among other benefits, but can also stir new research questions, and thus, innovation, by introducing new perspectives, those from the society they represent. In the NEWSERA project ("Citizen Science as the new paradigm for science communication"), we have been exploring, together with 38 CS initiatives, the challenges and opportunities for effective science communication aimed at quadruple-helix stakeholders (civil society, policymakers, industries and academia) and science and data journalists, through what we designated "Citizen Science Communication Labs". By co-designing and testing in the field science communication actions, we seek to demonstrate that by planning, implementing, analyzing and redefining science communication strategies in iteractive evaluation processes, CS initiatives improve their communication effectiveness and social perception, and better target their specific audiences, whilst increasing their impact. In parallel, by addressing cross-cutting issues such as data journalism, ethics or misinformation, we also intend to reinforce CS initiatives' active role in promoting critical thinking by harnessing the power of storytelling. Our methodology is already promoting rethinking CS practices themselves, and specifically the role that co-designed science communication strategies can play in creating a beneficial feedback loop, through iterative assessments, with better focused CS objectives and at the same time, incorporating open science and RRI principles, which will finally contribute to a multilevel impact.

Room N116 - Panel 070 HAS CRISIS RUN OUT OF STEAM?: EXAMINING THE AFFECTIVE, TEMPORAL AND AESTHETICS FEATURES OF CRISIS TALK

Session 2

946 CLIMATE SOCIALIZATION IN TIMES OF CRISIS – A COMPARATIVE STUDY OF ARGUMENTATIVE EMOTION WORK AND TIME WORK IN CLIMATE CHANGE DISCOURSES

Monica Marin (University of Bucharest) Cosima Rughiniș (University of Bucharest)

Is the doomsday clock really set at one minute to midnight? Are we casually, passively living our last days on a planet on the brink of environmental chaos and destruction? Or is climate crisis just one of those blatant exaggerations? Are we urged to act where there is no urgency, are we pushed to despair when there is no cause for desperation?
This paper examines emotion work and feeling rules (Hochschild, 1979) as infrastructures for knowledge and learning in two types of discourses on climate change. To do that, we look closely at recent articles about climate change from two popular English-language magazines: Vice and The American Spectator. We identify a typology of discourse configurations based firstly on argumentative emotion work (Hochschild, 1979) and secondly, on argumentative time work (Flaherty, 2003; Ciocănel, Rughiniș and Flaherty, 2021) and ensuing calls-to-action.
How do people translate and interiorize the climate change discourses into something that is emotionally acceptable for them? What are the affective configurations that sustain learning and acting in a period marked by intense debates on the climate crisis? Our typology may contribute to a better understanding of climate communication, opening a space for a nuanced positioning of affective and temporal argumentative strategies.
We thus propose a novel instrument for orientation in a seemingly never-ending carrousel of acceptance and denial models, stories, and analogies that shape the way we think, feel and act about climate change.

275 SOCIOTECHNICAL FUTURES VS UNCERTAINTY THE POLITICAL USES OF FRENCH ECONOMIC FORECASTS IN TIME OF CRISIS.

Régniez Théo (Université Paris Dauphine - PSL)

The French economic planning developed after the Second World War has resulted in the construction of a state expertise on economic futures. Since 1980s and the inability of forecasters to describe and analyse economic fluctuations of the 1970s, the construction of economic futures has taken a new way with the apparition of rival expertise coming from the private sector and independant institutes. Based on macroeconometric modelling, economic forecasts provide information on the economic evolution of the economy and its different sectors (Evans, 1997). Such constructed futures are essential to policy making and can even be a constraint in as much as forecasts limit sometimes the field of possibilities for State expenses (Angeletti, 2021). But, the multiplication of actors in the field of economic forecasting has not lead to more accurate forecasts. Between science and politics, forecasters are struggling against an ruthless uncertainty.
Drawing on an ethnography of a French forecasting institute during the Covid19 crisis and interviews about the Subrimes crisis in France, I would like to argue in this conference that forecasters are plainly aware of the high probability of failure even if they use complexe sociotechnical instruments and try to work with other « science of prediction » (Wenger et al., 2020).
If the production of the sociotechnical future is an important point, it seems at least as important to study the circulation and transformation of sociotechnical futures over time to understand why some instruments are progressivly discarded. My contribution aims at describing effects of failure and errors, especially in time of crisis, on economic policy instruments oriented toward the future. Paradoxically, when crisis occur, forecasters are directly put in front of the public scene, independantly of past errors. The political need for crisis talks seems to give temporarly their credibility back to forecasts modelling.

84 CONTEXTING CRISIS: UNDERSTANDING CRISIS AS A TEMPORAL PHENOMENON IN PRACTICE, THROUGH THE CASE OF YACHAY THE CITY OF KNOWLEDGE IN ECUADOR.

José David Gómez Urrego (KALEIDOS)

On March 2017 Ecuador's presidential elections were one week away, and the country had to decide whether to maintain the socio-political project spearheaded by Rafael Correa who had a 10-year government at the time, or opt for an abrupt political change towards the right. In this presentation, I describe how the electoral climate influenced, and was influenced by, the dynamics in Yachay the city of knowledge, the biggest and most controversial infrastructural project in the history of the country. Later, the onus of the analysis sets on the contexting practices used by Lenin Moreno and his allies to break with the previous government and to declare a national crisis while mobilising austerity-oriented changes across the public sector. In this setting, Yachay portrayed both as a symbol of the “pretentious failures” of the previous government, hence a justification for the crisis narrative, and as a site for the reforms to be applied and widely publicised. The presentation critically analyses both the idea of contexts as an external neutral reality and the context of crisis in particular. Drawing on evidence observed in Yachay and interviews with other public officials from other areas of the state during 18

months, the presentation uses the concept of contexting as a way to capture the shaping of contexts and their relation with expectations. The presentation provides evidence of how this has worked in Ecuador's government and how Yachay both influenced and was influenced by the context of crisis. The analyses of context, temporalities and crisis offers a reading of Yachay and wider sociotechnical politics that is often missing in STS, especially in settings beyond North America and central Europe.

Room N117 - Panel 080 ASSETIZATION: GOVERNING TECHNO-ECONOMIC FUTURES

Session 2

464 THE UK REF RANKING: GOVERNING THE FUTURE OF ACADEMIC QUALITY AND SCIENTIFIC RESEARCH

Sveta Milyaeva (University of Bristol, UK) Daniel Neyland (University of Oxford)

What is the future of the UK higher education sector? Transformed by casualisation, inequalities, deteriorating pay and working conditions, the sector still remains known for the quality of its academic research. Government funding of UK HE research is partly funded by the Research Excellence Framework (REF), a policy tool which facilitates selectivity in funding by ranking and rewarding high quality academic research. In the past three decades the REF performance has become an important indicator of the academic status of a UK university. It is an asset as it enables 'a durable economic rent' (Birch and Muniesa 2020) through becoming part of a university brand used in securing future income streams in the form of tuition fees and research grants. With so much at stake, the REF is crucial in constructing future expectations of what academic quality is, and the REF mechanics – understudied and taken for granted – brings these expectations into the present, and therefore governs UK HE research. Based on 34 semi-structured in-depth interviews with REF panellists, our research looks closely at the practices of peer-review that establish academic quality to strive for. We argue that consensus among peer-reviewers on academic quality is crucial for legitimacy of the REF. However, this pursuit of consensus through the mechanics of the REF (with its practices of benchmarking, scoring, calibrating and normalising) shifts the ultimate results – what counts as academic quality – from epistemic commitments to evaluation on a given scale, making it distinct from scientific or epistemic quality.

718 DIGITAL ASSET-MAKING IN THE GLOBAL HIGHER EDUCATION SECTOR

Janja Komljenovic (Lancaster University)

Higher education is traditionally perceived as a public sector, but being increasingly privatised and commodified around the world via tuition fees, private universities, micro credentials, etc. At the same time, and like other economic and social sectors, it is being increasingly assetised. In particular, digitalisation of the sector brings new opportunities for creating a diversity of digital assets, such as video recordings of lectures, or digital user data as students and staff engage with digital platforms in their teaching and learning practices. Digital platforms that are used in the higher education sector span from those offered by the big tech companies (e.g. Microsoft suite including Teams) to those offering virtual learning environments (e.g. Blackboard), research management systems (e.g. Pure), massive open online courses (e.g. Coursera), and a myriad of new 'edtech' specific platforms. These diverse digital platforms connect in institutional and sectorial digital ecosystems. The question then becomes, what are the technological, legal and economic relations between individual users, universities and platform owners in these ecosystems; and who owns, controls, and uses the emerging digital assets in the digital higher education sector. In this talk, I will discuss the evolving and emerging dynamic of digital asset-making in higher education with a particular focus on: (1) the notions of value in a digitalising higher education sector (what is perceived to have value), (2) future imaginaries (what future is imagined for the particular edtech and particular assets to be needed), (3) the political struggles of key actors in instituting the particular ideas of value and performing the particular future, as the key dynamics in making assets.

277 ASSETIZATION AS A TECHNO-ECONOMIC MODE OF GOVERNANCE

Kean Birch (York University)

Technoscientific capitalism is based on the asset form. And almost anything nowadays can be turned into an asset – that is, something that can be controlled, traded, and capitalized as a revenue stream, discounting future revenues in the present. Objects, experiences, life forms, bodily functions, intellectual outputs, and much more can be an object of this transformation, or assetization. Although assets can be bought and sold, the point is to get a durable economic rent from them rather than sell them in a market. Rent derived from ownership and/or control of asset. Analysing assetization helps us to unpack and understand the contingent nature of this process, thereby providing us with insights into how to intervene and at what points this intervention might be most helpful. As such, assetization can be considered as a mode of techno-economic governance, as much as an analytical tool for unpacking contemporary capitalism.

158 BLOCKCHAIN IN THE PACIFIC: ECONOMIC PERFORMATIVITY AND THE ASSETIZATION OF TRUST

Katrina Matheson (York University)

In 2018, the World Wildlife Fund, an international NGO, and Viant, a software services company operating on the Ethereum blockchain, launched a pilot program in Fiji to track fished tuna "from bait to plate." In this technoeconomic experiment, WWF problematized fishery industry concerns over sustainability into a lack of consumer trust, which it proposed would be solved by the application of blockchain tracing throughout the supply chain. Although some maintain that this is an example of "blockchain for good," critics suggest that this approach is solutionist and only serves to entrench global imbalances of power and "computational capitalism." The complexity of this debate suggested a closer look was warranted. Here, I use an Actor Network Theory approach to analyze the political economy of blockchain-traced tuna, which has yielded insights about the theory of blockchain and its role in this experiment. Namely, the co-production of blockchain technology and a society reeling from shattered institutional trust following the 2008 global financial crisis has given rise to an imaginary in which blockchain acts a talisman of trust. The application of blockchain in this case study suggests economic performativity as defined by Callon and MacKenzie and reflects an effort by economic agents to turn trust into a long-term, durable asset. In this linkage to Birch and Muniesa's notion of assetization, rent is drawn from assetized trust by way of a long-term data subscription on the blockchain.

766 MAKING POPULATION HEALTH DATA ASSETS

Rachel Rowe (University of New South Wales)

This paper extends the critical literature on assetisation (Birch, 2017; Birch and Muniesa, 2020) by examining how population health data assets are enlisted within digital health startups' financial strategies (Geiger and Gross, 2019). I draw this analysis from ethnographic observations at several digital health conferences (2019-2021), interviews with venture capitalists, digital health technologists, entrepreneurs, and multinational consultants (n=23), and an archive of industry and digital health policy documents from the U.S. and Australia. I show how the digital health technology start-up model involves making data assets via capture, augmentation, curation and articulation of the potential uses of population health data. Assetisation functions to cement competitive position, attract venture capital and thereby turn start-ups into viable acquisitions.
Probing population health data assetisation is a useful exercise, not least for clarifying alternatives. Some suggest that the solution to the deepening power and wealth asymmetries signaled by corporate data monopolies lies in transferring ownership of data to the individuals about whom that data relates. From the World Economic Forum's proposed data as a personal asset class (2011) to recent calls for a 'data-UBI' (Zarkadakis, 2021), the notion that everyday people can be enlisted among the data-asset rich has been heard from a chorus of unlikely allies, including radical liberals and entrepreneurs but also civil society groups and critical data scholars. In bringing my empirical work and the critical literature on assetisation into dialogue with these proposals, I show how moral and political claims for remuneration problematically confuse political power and self-determination with asset ownership and rent. Assetisation cannot be resisted or undone by democratising asset ownership or by devising better mechanisms for remuneration. It is in proposals that foster the collective power to decide what is done with our data that we will find more hopeful prospects for addressing social or economic inequality.

262 REPURPOSING GOOGLE ADS FOR CONTROVERSY MAPPING

Oscar Coromina (Malmö University) Anders Munk (Aalborg University) Alexei Tsinovoi (Non affiliated)

Digital advertising plays a central role in the business models and the technological affordances of digital platforms. However, despite the keen theoretical attention to the commodification of the audience in various critical data studies, there has been little exploration on how digital marketing can be understood as methodological lenses to study, in practice, both controversies as well as the practices involved in the commodification and valuation of attention around the issues that animate such controversies. Addressing this gap in knowledge by drawing on the experimental tradition of Science and Technology Studies, this article proposes repurposing the tools, data and practices of digital marketing professionals as new methodological points of observation in controversy mapping. Digital platforms such as Google create marketplaces for attention in which advertisers and marketers can buy ads and target audiences. These markets of attention are constituted through the multiplication of various standardized measures that set the method for purchasing advertising space and regulate the conversion of money and attention between principals and attention merchants. Focusing on Google Ads, we scrutinize the building blocks of advertising campaigns in the platforms: Keywords, Ads and Landing Pages and the metrics and measurements associated with these objects. We offer a set of recipes for repurposing the Google Ads platform for both controversy mapping and to deepen in the understanding the measurement, governance and valuation practices that are involved in converting attention into a tradable asset.

Room N102 - Panel 086 THE FORESTS WITHIN AND THE BRAINS WITHOUT: ALTERNATIVE HEURISTICS OF THE ANTHROPOCENE.

Maxime Le Calvé (Cluster of Excellence "Matters of Activity", HU Berlin, Germany)
Jennifer Clarke (Grays School of Art, Robert Gordon University, Scotland)

"The Anthropocene seems to arrive just as a whole new series of materialisms, vitalisms, realisms, and inhuman turns require 'us' to think about what has definite and forceful existence regardless of our sense of world." (Colebrook 2017)

Brains and forests are examples of sites where multiple formulations of our possible futures have flourished in recent centuries: many theoretical attempts, and rich poetical metaphors, bring together these living systems. Such metaphors have emerged since the beginning of modern science, casting converging technoscientific perspectives: neurons once appeared as trees to the naturalists, charting the way toward interventions, not only to heal but also to understand and naturalize psychological knowledge —Cajal spoke of "cultivation" when referring to the growth of the neurological forest toward adulthood — tame certain emotions, and possibly augment the cognitive powers of human beings. Thinking with forests (Kohn 2013), with fungi (Tsing 2015, Sheldrake 2020) or with bacterias (Hird 2009), with others grasped in the entirety of ecosystems, might facilitate not only the preservation of specific ecologies, but also the harnessing of their vital power, aimed at helping humanity stabilize the climate, or heal certain diseases. This panel seeks to engage with both the real and the metaphorical dimensions of relationships such as those between forests and brains, for which a "metaphysics of mixture" could be a pregnant notion (Coccia 2018).

Mapping out the topological features of brain materials at every scale has prospered within the framework of the connectome project, envisioning a complete understanding of the network properties and the functions of the human brain (Rose & Abi-Chaid 2013). Meanwhile, our knowledge of forests and mycelia have given way to urgent reflection on symbiosis and multispecies cohabiting, and on their forms of communication, under the influence of the sciences of information (see Kohn 2013). The field of complexity science has emerged as a blurry-edged attempt to bring together these various material beings under the scrutiny of the same algorithmic models. But the foresters of the brains, the neurosurgeons of the forests, the microbiologists and the fermentations enthusiasts exploring the evolutionary continuities of bacterias and human cells, all insist on navigating and thereby developing specific embodied knowledge about the relations that encompass and inhabit these milieux. In dialogue and in negotiation with the current credo of technoscience, they are committed to an understanding of the more-than-human, or the beyond-human, which builds upon these relations. Anthropologists and ethnographers can help intervene for a future that will bridge the brain, the guts and the forest, not only as an image, but as a living alliance which can be revived.

This is the age for a radical heuristic of the Anthropocene: respecting and knowing the forest within, and conscious and caring for the brains without. Shifting perspective toward a truly decentered view of human-environment relations must start from current knowledge infrastructures. As such, this panel will be grounded in actual practices and/or experimental ethnographies, which consider how alternative heuristics could combine in playful and unexpected ways. How can we ignite new imaginaries and modes of resistance, working against extractivism and even forms of trans-humanism? This panel invites researchers working at the interface of applied sciences and anthropology, to take seriously the potential of these old ideas and to ground them in their current fieldworks and collaborations.

Session 1

584 MINDING THE FOREST, FORESTING THE MIND: LIVING THROUGH SOCIOECONOMIC PRESSURES IN SIERRA LEONE'S FOREST MILIEUX

David Kananizadeh (Max Planck Institute for Social Anthropology, Germany)

In this paper, I reflect on how people inhabit Sierra Leone's forest milieux and live through the socioeconomic pressures living in and with the forest entails by mapping forest and mind onto each other. With such a cartographic approach I propose an alternative heuristics to think of social well-being ecologically.
In Sierra Leone, in living with and in the forest, people carefully navigate the relations that situate them in forest milieux and the uncertainties this entails. For this, people depend on each other; they help each other out. Yet, this solidarity is precarious. While mutual dependency is commonly recognized, people are at the same time aware that dependence always entails losses of autonomy, which puts one's full personhood at risk. And in some moments, this can become unbearable – and even lead to mental breakdown.
In this paper, I reflect on the mental breakdown of one of my research partners by a twofold cartographic approach. Firstly, I map her kin's movements through institutions of traditional, biomedical, and religious healing as they attempted to trace down what had befallen her. Secondly, I map my research partner's own movements through these institutions, which highlights her attempts to reconnect to the social world around her and to escape spaces of social abandonment. While the first map situates mind within her body, in the second map, mind extends outwards to the relations that encompass the forest as a milieu.

With this twofold cartography I argue for mapping forest and mind onto each other to follow how forest dwellers inhabit, refuse and move through their conditions. Such a cartographic approach then, I go further, offers a heuristics to think of social well-being ecologically.

186 CROSSING THE DARK FOREST TOGETHER. ENCOUNTERS BETWEEN MICROBIOME SCIENCE AND ANTHROPOLOGY ACROSS TIME, SPACE AND SPECIES

Roberta Raffaetà (Ca' Foscari University of Venice)

In my presentation I will analyse how the concept of the ‘forest’ – evoking mystery, complexity but also discovery - is both used in AI and microbiome research and how it can be a metaphor that help to make sense of experimental ethnographic spaces based on interdisciplinary encounters in a time of ecological crisis. My current project that is an ethnography of the technoscientific practices of a specific community of microbiome researchers. They aggregate, through AI systems, microbial data across species, scale and time. Their final aim is to develop scenarios of health for both humans and the environment. In microbiome research, the forest is a metaphor employed to express the ecology of microbial communities and its biological mysteries (also called ‘microbial dark matter’). In AI, ‘random forest’ is a forest made of research trees called 'weak learners' that, taken together, give a good approximation to a problem that has an unknown solution. Beyond and beside the conventional critique of AI being a normative tool of domination and control, AI and its arboreal conceptualizations have a potentially emancipatory aspect for their capacity to shape futures which may exceed the present and the past dimension, opening up to unknown futures. Crossing a dark forest is un uncertain endeavour, such as crossing time, space and species. As an anthropologist conducting an ethnography in a microbiome lab, I take advantage of the broad zone of uncertainty that are at the basis of the scientists’ technoscientific practices: it is exactly the exploration of uncertainty that we have in common. This opens up the opportunity for microbiome researchers to question themselves and enter into dialogue with other disciplines and for anthropologists to critically reflect on their own epistemological and ontological uncertainties and imagine new ethical configurations of living in an entangled and more-than-human world.

902 INTERACTION WITH PLANTS AND VEGETAL BEINGS - HOW TO DESCRIBE THEM, CONCRETELY ?

Mylène Tanferri (University of Lausanne - Switzerland)

This paper aims to present and discuss a future research project using the premisses of Multimodal Conversation Analysis (MCA) tools to describe interactions with plants and vegetal beings. I am especially interested to discuss the ways we describe plants, vegetal beings and nature in our analysis, and their consequences.

A growing interest for plants and their agencies is emerging in the social and human sciences. Studying human interactions with plants from different perspectives, these propositions suggest that plants can be considered as actors requesting moral and ethical attention. Their aim is to renew our consideration about our environment and its preservation, by revisiting our assumptions about what plants are, how they interact with their surroundings and how we should interact with them. However, vegetal agencies can be further studied, especially to understand the situated details of plants abilities to interact in the way MCA tools allow us to do. Since the use of video recorded interactions, MCA takes into account senses and bodies not only as means to produce interactions, but also as enduring and pervasive elements that are continuously embedded in the shapes of the collectives. MCA also recently evolved to take into account other than human beings, such as objects and animals. Using video analysis and transcription will provide new venues to both understand and describe interactions with plants and vegetal beings as stable but moving and living other-than-human actants.
Central to MCA are several transcription conventions. Transcriptions are not only description and analysis tools, they also ask questions regarding agencies and their depictions and renderings. The proposition is to start thinking on how we can analyze and make available the details of these interactions, observing how plants interact as stable but mobile elements and how they are interacted with, in the detail of situated practices and manipulations.

729 MAKING TIME: SPECULATIVE ENGAGEMENTS WITH EMBODIED TEMPORALITIES, BIOSCIENCE, AND ART

Lotta Hautamäki (University of Helsinki) Mianna Meskus (Tampere University)

In this presentation, we explore novel heuristics for understanding memory and embodied temporalities in the Anthropocene. Thinking with Isabelle Stengers, we engage in a quest of speculation in the form of ethnographical experiments with bioscience and art. Instead of differentiating, or bifurcating, the sites of bioscience and art in terms of objectivity or subjectivity, our primary focus is on the experimental and experiential within both. We sound out new ways of sensing and making time within two different sites: 1) dialogues with people born around what is considered as the beginning of the Anthropocene concerning the bioscience of (epi)genetics, stem cells and microbiomes 2) sensory ethnographic engagements with art and memory in museums.
These speculative engagements are part of an ongoing methodological development where the aim is to find ways to cultivate meaningful life in times of uncertainty and not-knowing. In engaging with bioscience and art in our speculative practice, the aim is to remain open to uncertainties in the ‘interstices’ where the interlaced lives of different organisms lurk. We propose that this kind of life may be known particularly in the embodied experience

and knowledge of temporalities, since the body is an integral part of the temporal generation of experiences with both humans and other living beings. Therefore, our developing speculative methodology is engaged with memory as something that refers to an embodied and sensory process of recalling the past from the perspective of a present that anticipates a future.
The responsibility of this kind of speculation resides in creating rather than shutting out possibilities in STS practice and in creating meaningful life in the Anthropocene. This presentation will introduce our speculative engagements and discuss the heuristics used, as well as ponder the ethics of embodied temporalities in STS practice.

Room N111 - Panel 093. GOVERNING SCIENCE

Session 1

423 EMBRACING HETEROGENEITY: WHY PLURAL UNDERSTANDINGS STRENGTHEN INTER- AND TRANSDISCIPLINARITY IN ACADEMIA AND POLICY

Bianca Vienni Baptista (ETH Zurich) Isabel Fletcher (University of Edinburgh) Catherine Lyall (University of Edinburgh) Christian Pohl (ETH Zurich)

'Interdisciplinarity' (ID) and 'transdisciplinarity' (TD) are important topics in academic and policy discourses, particularly in discussions about mission-oriented knowledge production. There is an increasing demand from the policy sector for greater integration of interdisciplinary research (IDR) and transdisciplinary research (TDR) into research calls and funding programmes, so that they can be used to address societies' grand challenges.
In this paper we ask: (i) How do the academic and policy literatures define and characterise ID/TD? And (ii) What are the implications for research and funding of the different understandings of IDR/TDR in the academic and policy literatures? We conducted an extensive qualitative literature review of academic and policy literatures to disentangle the different understandings of ID/TD. Unlike other authors, we start from the premise that plural definitions of these terms reflect the many ways in which ID and TD are practiced and understood. Therefore, we argue that the heterogeneity of understandings in ID/TD constitutes an asset in research and policy and not a deficit. With this analytical perspective we contribute to a growing body of critical studies of ID/TD and STS, seeking to advance the potential of ID/TD in research policy.
We found that knowledge about the nature and practice of ID/TD is currently dispersed across many communities and referred to selectively in international contexts. Moreover, there is little overlap between the academic and policy literatures on the practice of ID/TD, leading to a process of 'reinventing the wheel' where key problems in conducting IDR/TDR are repeatedly rehearsed in policy documents, while solutions provided by the academic literature are ignored.
We conclude that better connecting the academic and policy discourses of ID and TD will benefit both by producing more nuanced definitions of ID/TD responding to calls from the EU for the further development of support for IDR/TDR.

768 FUTURES IN KNOWLEDGE MAKING – PROBLEMS AND POSSIBILITIES WITH UNIVERSITY AND INDUSTRY ENGAGING IN CO-LEARNING FOR INNOVATION

helen jøsok gansmo (NTNU)

Related to the many major shifts in our world that create feelings of crisis and urgency for better technoscientific futures, we have also witnessed that people have lost trust in the practices of the knowledge society. The institutions engaged with higher education, R&D and governance are met with expectations to produce both certainty and innovation, as well as graduates - future employees - who have interdisciplinary team skills and can seize the opportunities presented by crises to translate new knowledge claims and accompanying uncertainties towards innovative technoscientific futures.
Not only research but also the production of the skills needed is under stress as seen in changes of the autonomy and accountability of universities partly related to debates regarding the work life relevance of education (OECD 2018), pointing towards engagement and dialogue between universities and industry. Through these expectations the university practices have been challenged, for instance towards producing more robust and sustainable knowledge and graduates in accordance with studies of innovation highlighting university-industry collaboration (for instance Modus 2 (Gibbons, Nowotny et al.), Triple Helix (Etzkowitz & Leydesdorffer), challenges towards democracy and expertise (Jasanoff, Latour, Nelkin, Stenger, Yearly), RRI (Åm) or quadruple helix (Carayannis et al)).
Based on reviews of the portfolio of study programs offered at a Norwegian university, and qualitative interviews with teaching and administrative staff as well as collaborating industry partners and governmental offices for innovation, this paper will describe how transdisciplinarity and innovation are regarded as panacea and create push for co-learning opportunities between industry and university. Even though transdisciplinary research is not a simple bridge connecting society and relevant academic research (Hahn, Hoffman, et al. 2018), a push for co-learning opportunities between industry and university frame students as the "missing masses" enabling possibilities for innovating our technoscientific futures in transdisciplinary meetings between universities and industry.

663 WHO GOVERNS EUROPEAN RESEARCH? A QUALI-QUANTITATIVE STUDY OF A TRANSNATIONAL AND INTERDISCIPLINARY RESEARCH EVALUATION IN THE EUROPEAN RESEARCH COUNCIL

Lucas Brunet (Department of Science, Technology and Society (STS), School of Social Sciences and Technology, Technische Universität München)Ruth Müller (Department of Science, Technology and Society (STS), School of Social Sciences and Technology, Technische Universität München)

The European Research Council (ERC) is one of the most important research funding organisation in Europe. Every year, reviewing panels composed of researchers from different nationalities and various research fields gather together to decide which research projects should be funded. Our paper presents the preliminary results of a research project studying the formation and functioning of six reviewing panels (two in social sciences, two in life sciences, and two in physical sciences and engineering). We ask: by whom is research evaluation organised in a transnational and interdisciplinary context, and what are its consequences on evaluation practices. To answer these questions, we combine a quantitative analysis of the composition of reviewing panels gathering more than 600 panel members over 12 years (2009 - 2020), with the qualitative analysis of 23 interviews and various institutional documents. In particular, we examine how the organisation of research evaluation influences and is influenced by: 1) the disciplinary composition of reviewing panels; 2) the biographical characteristics of reviewers; 3) and the evaluation practices of these reviewers. First, drawing on interviews with ERC officers and panel chairs, combined with a statistical analysis of the composition of reviewing panels since 2009, we study how some disciplines were included, regrouped, but also left out of these panels. Second, by combining a statistical and a network analysis, we investigate on the professional trajectories of panel reviewers. We examine differences in, e.g., career stages, institutions, gender, previous funding obtained and duration of membership in these panels, according to disciplines and nationalities. Third, by conducting interviews with reviewers members of these panels, we analyse tensions and compatibilities between disciplines and methods. Ultimately, our paper aims to understand the epistemic implications of research evaluation in Europe and to reflect on the contribution of quali-quantitative methods to valuation studies.

619 THE INNOVATION POTENTIAL OF SCIENCE IN A SYSTEM DEPENDENT ON GRANT FUNDING

Nina Fárová (The Centre for Science, Technology, and Society Studies, IP CAS)Radim Hladík (The Centre for Science, Technology, and Society Studies, IP CAS)

The Czech scientific system, like in other CEE countries, is largely dependent on grant funding, as institutional funding is insufficient in the long term (Cidlinská et. al 2018). At the same time, the success rate in many grant competitions has been decreasing in the Czech Republic in recent years. It is not a novelty, therefore, that grant applicants have to adapt their projects to what they think the grant funding system expects of them. However, are we losing any innovation potential by this pragmatic step? What types of topics do academics want to invest their time in? What level of risk is acceptable? These questions are important especially in the Czech context where there is an ambition to become one of Europe's innovation leaders by 2030 (Government of the Czech Republic 2019). The paper will present findings from qualitative research among the most successful Czech grant applicants. We have created our own calculation to determine the most successful applicants and conducted qualitative interviews with 14 of them across both SSH and STEM fields. Preliminary analysis so far suggests that a large dependence on the grant funding brings at least three problems that do not contribute to the greater innovativeness and diversity of Czech science. First, thematic rigidity, where we observe an effort not to deviate from the ruts and stick to certain topics, leading to closure in small-scaled topics. Second, suppressed potential, which is influenced by the predominance of short-term projects that do not allow the topic to be developed in depth, and which arises from a lack of space for high risk / high gain projects. Third, frozen imagination, which points to limited ideas about how the funding system in Czech science could work differently or better in the future.

23 NEW STAKEHOLDERS, NEW RULES OF THE GAME: SHIFTING BOUNDARIES IN CANADIAN INTERDISCIPLINARY HEALTH RESEARCH

Albert Mathieu (University of Toronto) Laberge Suzanne

The idea of interdisciplinarity has been taken up by academic and governmental organisations around the world and enacted through science policies, funding programs and higher education institutions. In Canada, interdisciplinarity led to a major transformation in health research funding. In 2000, the federal government closed the Medical Research Council (MRC) and created the Canadian Institutes of Health Research (CIHR). From the outset, CIHR's vision and goals were innovative, as it sought to include the social sciences within its purview alongside more traditional biomedical research. The extent to which it has been successful in this endeavour, however, remains unknown. The aim of our study was to examine how CIHR's intentions to foster inclusiveness and cooperation across disciplines, including the social sciences, were implemented in the agency's own organisational structure. We used a comparative design and focused on social scientists' representation on committees and among decision-makers at the MRC from 1985 to 2000, and at the CIHR from 2000 to 2015. We examined the composition of the Governing Council, the Institute Scientific Directors, the Chairs of the College of Reviewers, and two International Review Panels invited by CIHR. We targeted these committees and decision-makers since they hold the power to influence the field of Canadian health research through the decisions they make. Our findings show that the most significant change within CIHR leadership structure occurred among non-academic stakeholders (for ex. biotechnology, pharmaceutical and financial firm leaders); their representation on the Governing Council doubled between the two periods targeted by our study, from 14% in MRC to 30% in CIHR. Biomedical scientists maintained their dominance as decision-makers, and social scientists achieved, at best, a tokenistic position on decisional committees. We will discuss the implication of this shift favoring private firm stakeholders on social scientists' access to research funding and research practices.

Room N109 - Panel 094. AI, DIGITALIZATION, AND ALGORITHMS

Session 1

313 DIGITIZING AND KNOWING: A NEW-MATERIALIST READING OF CHANGE AND UNCERTAINTY IN DIGITAL PATHOLOGY

Chiara Carboni (Erasmus University Rotterdam) Rik Wehrens (Erasmus University Rotterdam) mRomke van der Veen (Erasmus University Rotterdam) Antoinette de Bont (Tilburg University)

This presentation mobilizes Karan Barad's agential realism in an endeavor to explore the onto-epistemic characteristics of digitized objects, their scripted users, and the ethical tensions underpinning digitization. Agential realism encourages us to see how the semiotic-material apparatuses behind, respectively, glass and digital slides, enact ontologically different epistemic objects, with different affordances. In other words, digital and non-digital objects enable different actions and epistemic practices, as well as different users. Building on an ethnographic study of a pathology department in which digital and non-digital practices coexist, we show how difficulties plaguing digitization efforts are rooted in the fallacious representationalist rationale scaffolding them. This rationale, upheld by professionals, technicians and managers, casts digital slides as a more or less accurate representation of glass ones, and thus ontologically and epistemologically overlapping with them. In so doing, it obliterates, at once, the differential performativity of digital and non-digital apparatuses, and the interventionist nature of seeing and knowing in the practice of pathology. Observing pathologists' diagnostic practices, we come to realize that diagnosing in non-digitized contexts entails more than just seeing: pathologists intra-act with their microscopes and the specimens they examine. Digitization limits the possibilities for intra-action: reducing pathologists' diagnostic practices to looking, scanners provide them with an epistemic object frozen in its ontological unfolding. Digitizing, in this case, enacts an agential cut that pushes pathologists out of the subject position to make space for a prospective, non-human epistemic subject: artificial intelligence. With this analysis, we strive towards a twofold aim. First, we probe agential realism's potential to meaningfully connect several STS concepts, such as ontological performativity, epistemic interventionism, epistemic cultures and their apparatuses, technological affordances and scripts. Second, we take a first step towards a feminist-STS-informed conceptualization of digitizing epistemic objects and their users present and future.

220 IMAGINING ALGORITHMS AT WORK. FEARS AND HOPES ABOUT ARTIFICIAL INTELLIGENCE IN HEALTHCARE

Francesco Miele (University of Padova, Department of Neuroscience Lytske Bakker (Erasmus School of Health Policy & Management, Section "Health Technology Assessment") Welmoed van Deen (Erasmus School of Health Policy & Management, Section "Health Technology Assessment") Carlos Godoy Junior (Erasmus School of Health Policy & Management, Section "Health Technology Assessment")

This paper shows how socio-technical imaginaries transmit "moods and sensations" (Bucher, 2017: 41) about artificial intelligence (AI) in healthcare, generating different and competing ways of thinking about what AI algorithms are and affecting how these technologies are used. Given the dominance of a deterministic perspective on algorithms in healthcare, often represented as discrete "entities" (Schwennesen, 2019), our work aims at bringing an STS perspective in this debate.
The presented reflections draw upon the experience of AICCELERATE, an ongoing Horizon2020 project aimed at designing/testing an AI based remote monitoring system to predict the advanced phase of Parkinson's disease, allowing for early intervention and treatment. Starting from a template analysis of qualitative data (i.e., interviews and focus groups with patients and neurologists in Italy and Finland), three sociotechnical imaginaries about AI algorithms emerged:
• The replacement, in which professional work is replaced with A.I. algorithms. This scenario brings with it various hopes (e.g., improving the timing of diagnosis) and fears (e.g., depersonalizing doctor-patient relationship).
• The Big Brother, in which the focus is on the monitoring received by the patient. In this case for most of the doctors this scenario is positive because it allows a continuous transmission of data, while the patients are divided between the hope of feeling taken for and the fear of intrusiveness.
• The empowerment in which A.I. algorithms are destined to change the daily life of doctor and patients, without putting in discussion the supremacy of humans over non-humans. A recurrent hope is that humans have a good "non-human assistant" (e.g., improving the decision-making process), the main fear is that users become recalcitrant to receive this help.
The different imaginaries will be compared to each other, tracing the ways through which they can interact and defining the possible implications for the design of AI-based remote monitoring systems in healthcare.

51 VOICE ASSISTANTS IN THE CENTER OF THE INTERNET OF THINGS: ENABLING INTEROPERABILITY WHILE SECURING MARKET DOMINATION

Niklas Strüver (University of Siegen)

With household devices becoming “smart”, more people look to augment their homes and their daily practices through Internet of Things (IoT) appliances (Maalsen/Sadowski 2019). Voice assistants (VA) like Alexa or Google Home are becoming central to this product group. Devices from different manufacturers with separate apps and controlling interfaces can complicate and encumber daily practices in a smart home (Strengers/Nicholls 2017).VA are marketed as a central interface supposedly enabling interoperability and accessibility by streamlining all usage through voice interaction. This gives their developers a pivotal position of power when it comes to standardisation and market control. A report by the European Commission finds a “Lack of interoperability due to technology fragmentation, lack of common standards and the prevalence of proprietary technology, as well as the control over interoperability and integration processes by a few providers of voice assistants […]” (European Commission 2021). Fittingly an attempt to balance these issues is made by companies to develop a common standard (Matter 2022). By investigating the case of Amazon’s Alexa in an ongoing qualitative documentary analysis of blog entries – directed at IoT developers – I trace how Amazon seeks to reinforce their market position despite these claims of a common standard. This analysis contextualises the technological and organizational standards (Bowker /Star 2000) that Amazon pursues to make Alexa the go-to device for IoT developers and users. The interoperability and ease of use that smart homes stand to gain from VA therefore, draw users and developers into a nexus of power relations and struggles to realise an imaginary of the future fraught by competition. By showing the (data) practices surrounding Alexa’s standards I critically examine how third-party developers are enticed and coerced to comply with Amazon’s expectations. Amazon’s VA then is supposed to become the central gatekeeper and infrastructure of the smart home.

950 DIGITIZING DIFFERENCE: NEGOTIATING SOCIAL ORDERS IN 21ST CENTURY INDIA

Pariroo Rattan (Harvard university)

The large-scale push for a Digital India by successive governments of India has been heralded as the solution to India's problems of corruption, inequality and economic backwardness. Resting with the principle that "a well-connected nation is a prerequisite to a well-served nation” (digitalindia.gov.in) the decade-old Digital India policy hopes to cut across demographic and socio-economic conditions or in the words of Prime Minister Narendra Modi technology “serves as a leveller and a springboard” that “bridges the distance between hope and opportunity”. Data, identity and markets assume new connections and undergird new theories of progress as the state aggressively builds and pushes public infrastructure in digital forms. I will lodge this paper in the framework of socio-technical imaginaries (Jasanoff and Kim, 2009) which are “collectively held and institutionally stabilized, and publicly performed visions of desirable futures”. I will investigate the new social contract and ideas of upliftment that underlie the imaginary of Digital India and the vision associated with positioning India as a technological frontrunner in global politics. The move to digitize presumes the possibility of standardizing differences to create a free flow of people, money, information akin to a perfected free market. The differences in this centuries old civilization with a population of over a billion, however, do not vanish. Kinship-based networks of social security, religious observances, old methods of accounting, cosmological reasonings and culturally-specific practices of collegiality and gender continue to dominate underneath the gloss of digitization. The second half of this paper will bring socio-technical imaginaries to bear on a relatively understudied part of social order, by studying how seemingly contradictory epistemic and moral orders ("competing imaginaries") are negotiated and co-exist despite the inequality of power relations between them.

799 THE BIRTH OF (AI) ETHICS AND ITS DISCONTENTS

Manolis Simos (Department of History and Philosophy of Science, School of Science, National and Kapodistrian University of Athens) Konstantinos Konstantis (Department of History and Philosophy of Science, School of Science, National and Kapodistrian University of Athens) Aristotle Tympas (Department of History and Philosophy of Science, School of Science, National and Kapodistrian University of Athens)

This paper has a threefold aim. First, it traces the emergence of ethical issues regarding artificial intelligence (AI). Second, the presentation of this emergence constitutes a critical reconstruction. We expose and undo the metaphysical, essentialist foundations in which the contemporary framework regarding AI ethics—and, in extension, contemporary ethics tout court—is grounded. Third, this very reconstruction involves the formulation of a concrete framework for the analysis and discussion of ethical issues.

The presentation of the emergence of ethical issues is based on our primary research on publications in ‘Science’, ‘Nature’, and ‘Scientific American’—the three most influential science news magazines that shape the field internationally—and in ‘The New York Times’ and ‘The Guardian’—two of the most influential newspapers in the anglophone world—from the early 1960s until now.

We show how the fact that in the last thirty years machine ethics has become the dominant discourse, affects constitutively the way traditional AI ethics issues are approached. First, the object and criteria of ethical valuations are formulated in such a way as to be specifically codified in order to be translated into specifically formulated universalisable rules. Second, the programming of ethical machines is based on equally specific models of subjectivity. Thus, in a feedback loop created, the way of building an ethics machine does not only dominate the discussion of AI ethics; rather, it becomes the blueprint for the approach to ethics simpliciter. Hence, the parenthesis of the title; hence, its discontents.

Furthermore, the perspective of our analysis—informed by Michel Foucault's conceptualisation of power, Raymond Geuss' realist political thought, and Didier Fassin's reformulation of a critical sociology—indicates the political aspect of a situated ethical stance, its presuppositions as a diagnostic and therapeutic tool, and the way the opening of AI technology black-boxes can effectively function.

Thursday 7th July

15:45-17:15

Room N109 - Panel 005. WHO CARES ABOUT NEUROSCIENCE NOW?

Greg Hollin (University of Leeds, UK) Des Fitzgerald University of Exeter, UK)

Hard as it may be to believe, there was a time when neuroscience was one of the hot topics in STS. During the "decade of the brain" in the 1990s, huge amounts of public money and public interest were invested in the brain sciences - an attention that spilled over into STS. Key works by prominent STS scholars took the new brain sciences to task for their reductionism (Martin, 2004), saw them as a site for the recreation of identity (Dumit, 2004), worried that they were medicalizing childhood (Rapp, 2011), located them as a site for new universe of knowledge and belief (Ortega and Vidla, 2011), proposed a new form of critical friendship between them and the social sciences (Rose and Abi-Rached, 2013), and so on.

Up to about 2015, then, neuroscience was a major site of debate and interest in STS. And yet it is clear that, today, neuroscience is no longer a major site of interest in STS, nor is it the location of major disagreements or pronouncements in the field. The word "neuroscience" did not appear in either the title nor the abstract of any of the 217 panels accepted for joint EASST/4S conference held in 2020; neither did the word appear in any of the titles or short abstracts of the 210 open panels offered at 4S 2021.

This panel has two goals. One is to re-situate the neurosciences - and the psychological sciences in which they are at least partly nested - at the heart of contemporary understandings of self and society, whether in discussions of mental health and wellbeing (Pickersgill et al., 2017), sport (Hollin, 2021), understandings of the self (Vidal and Ortega, 2017) , racialization (Rollins, 2021), contemporary city living (Rose & Fitzgerald, 2022), cultural theory (Pitts-Taylor, 2016), or everyday life (Schregel and Broer, 2020). At the heart of the panel is a claim that understanding the brain and brain sciences remains a key task for Science and Technology Studies.

But the panel also invites reflection on the strange absence of neuroscience in contemporary STS. If these sciences are as consequential as we believe, why so little interest? Is this due to an inherent problem of the sciences themselves, which have lost public prominence after many of the promises of the decade of the brain failed to materialise? Is it to do with the dispersal of "neuroscience" into computational and algorithmic approaches? Or does it have something to do with STS itself, a field tacitly (and not always only tacitly) governed by fashion and in-group dynamics, where apparently hot topics quickly attain self-fulfilling dynamics.

For this panel we invite contributions that turn our attention back towards neuroscience through these two forms of attention. Indicative topics include:

The brain and the environment
The brain and social practice
The brian in theory
The brain and technological imaginaries
The brain and racial justice
The brain and gender
The brain and (mental) health
The brain and STS

Session 1

312. "BRAIN TALK" AND MENTAL HEALTH: EFFECTS OF NEUROSCIENCE ON CLINICAL PRACTICE AND SUBJECTIVITY

Andrea Bielli, Universidad de la República (Uruguay), Pilar Bacci, Universidad de la República (Uruguay) Lauren Predebon, Universidad de la República (Uruguay)

It has been noted that the relationship between the neurosciences and the clinical practice are not clear, as neither is the "therapeutic promise" of the neurosciences regarding the innovations in the mental health therapeutic (Pickersgill, 2011). Nevertheless, the aim of the neurosciences of permeating the sphere of mental health and psychological knowledge has not decreased. In this sense, some recent initiatives for disseminating the neurosciences in Uruguay indicate the clear intention of claiming increasingly more space, not only in the health sector but also among the general public.
In this paper, we will see how the dissemination of neuroscientific knowledge in the psi field has introduced a shift in the clinical space that has translated into the emergence of a "brain talk" in patients. Drawing from the results of two qualitative studies carried out in Montevideo (Uruguay) from 2015 to 2019 about the user experience of anxiolytic and antidepressant drugs, we will situate how a cerebral vocabulary, mediated by medical and psychology professionals, emerges, not as a specific therapeutic promise, but as a clarifying explanation of the psychological suffering that resets the relationship of the subject and his ailments, the therapeutics and the hope of improvement.

This paper intends to contribute to STS by illustrating how the neuroscience discourse connects with the experiences and expressions of the subjects in the field of mental health.

115 HOW DO NEUROSCIENTISTS THINK ABOUT CRITICISM OF NEUROSCIENCE?

Eileen Wengemuth (Philipps-Universität Marburg)

Neuroscience as a discipline has been faced with criticism from various different fields, including philosophy, sociology, psychology as well as from neuroscience itself. Points of criticism range from criticism of methods to the questioning of implicitly underlying philosophical or sociological assumptions. On the other hand, neuroscience is a flourishing research field with a lot of resources and is often considered to have a strong impact on the development of psychology as a science.
For the first part of my dissertation project, I have conducted a literature analysis to give an overview of the points of criticism that have been made.
For the second part, I have interviewed neuroscientists to tackle the question of which points of criticism they have come across, how they position themselves towards different points of criticism and what they would criticize about their discipline. For conducting as well as analyzing the interviews, I have used a grounded theory approach in combination with the critical-psychological approach of praxis research.
In my presentation, i would like to make the case that two aspects, namely neuroscientists' understandings of science and the working and research conditions in an economized academic system need to be taken into account in order to better understand criticism of neuroscience as a phenomenon as well as how neuroscientists position themselves towards different points of criticism.

850. DECENTRING THE BRAIN? THE RE-EMERGING FIELD OF NEURO-TECHNOLOGIES OF CHRONIC PAIN IN THE UNITED STATES

Benjamin Lipp (Cornell University)

Chronic pain is currently re-emerging as a field of neuro-technological innovation. Especially in the US, where the ongoing opioid epidemic takes its toll, neuromodulation is being re-considered as a ‘riskless’ frontline tool for the management of chronic pain. While the use of neural stimulation in pain management is not new, the specific case of the US may serve as an opportunity to re-evaluate some of the assumptions in early social studies of neuroscience in STS. Most importantly, I argue, we should reconsider our focus on the brain and neuroscience itself. This contribution is based on an ongoing investigation of the promissory discourse and use of neuro-technology in pain management in the US. It focuses especially on the emerging market of non-invasive wearable devices and on minimally invasive techniques.

The case of neuro-technologies of chronic pain is noteworthy in a number of aspects. First, chronic pain has been and still is a highly uncertain terrain for neuro-technological innovation (Gardner 2013). While much of the early research on neuroscience was carried by the hype around brain research, current discourses and practices around pain management are characterized by a constitutive ambivalence of high and low expectations (Gardner et al. 2015). Second, neuro-technologies of pain are situated at the intersection of neuroscience and engineering. Hence, the ‘neuro’ interfaces with other technological trends such as automation, artificial intelligence, and wearable technology (Lindner 2020). Third, the social study of neuroscience usually focuses on technologies that target the brain (Gardner 2017, Rose 2016, Dumit 2004). However, the case of chronic pain shows that actors in the field of neuromodulation seek to build peripheral interfaces relying increasingly on non-invasive or minimally invasive techniques to modulate experiences of pain.

137 SOCIO-TECHNICAL FUTURES AND CYBORGS: CONTESTED VISIONS IN THE FIELD OF BRAIN-COMPUTER INTERFACES

ROBERTO FAVALLI (University of Padua)

Brain-computer interfaces (BCIs) are a cutting-edge neurotechnology that allow direct interaction between the neural system and external electronic systems. Despite scarce application, over the past decade the field of BCI has been populated with far-reaching promises and expectations, especially regarding the issue of merging of man and machine. Adopting an STS perspective, we look at the field of BCIs, in particular at the related scholarly literature, as a discursive setting where meanings and representations of bodies, technologies and its interrelation are produced, negotiated and enacted. Particularly, through the notion of visions, the socio-technical future discourse of the BCIs field is explored and analyzed within scholarly literature. Whilst the future of these technologies are largely approached mostly through the question: “are we all going to become cyborgs or is it only hype?” – the question we’d like to tackle in this contribution is the following: “which kind of cyborgs are enacted here?”.
Our analysis reveals two different visions of cyborg which are articulated within the field and whose co-existence is negotiated. One considers intentionality and agency of the subject as a fundamental element of the human-

machine interaction. Whilst the second one overshadow an active role of the human and looks at the human-machine interaction as a co-adaptation that take place beyond the subject's intentionality. After describing the two different visions of cyborg that emerge from the analysis, I'll follow how theirs co-existence within the field is negotiated and articulated in the scientific publications arena and through which different semantic, discursive and practical dynamics.
Highlighting these two visions and theirs differences is important for extending the STS reflection on the so far little explored field of BCIs, to better inform the ethical discussions on these emerging technologies, and to enrich the theoretical and critical debate around the human-machine hybridization issue.

222 THOUGHT TRANSFER AND BRAIN CONNECTS – PROSPECTS, REALIZATIONS, AND POWERFUL ENACTMENTS

Sigrid Schmitz (University (ALU) Freiburg)

Forecasts of technologically facilitated communication between distinct brains via Brain-to-Brain Interfaces (BTBI) or between a brain and the internet via a Brain/Cloud Interface (B/CI) seem to indicate a milestone in neurotechnological development, driving away from medical enabling to non-medical enhancement. Besides ethical aspects concerning ownership, integrity and privacy of the own thoughts or minds (e.g., Hild 2019, Lavazza 2018), it's worth to take a deeper look into the underlying neuroscientific and neurotechnological concepts and the factual realizations of interconnecting brains so far.
I will elaborate an in-depth analysis of the first hype around BTBI in 2013/2014 referring to a rat-to-rat BTBI and prophesying a human-to-human BTBI, followed by some years of silence concerning the latter. It was until 2019, when the group around Rao Rajesh published the realization of a „multi-person non-invasive direct brain-to-brain interface for collaborative problem solving" (Jiang et al. 2019: 1). What turns out from closer analysis, however, is a BTBI-connected Tetris player receiving a flicker signal into his visual cortex when his counterparts turned around a block in their game. Despite this solely transfer of a sensory impulse, only signing that something happened, the so called "BrainNet" is argued to solve "many of the limitations of past BBIs" (2) on the road to transferring semantic thoughts.
Such reductive realizations unmask the limitations of the underlying concept of neurologically determined and in such transferrable minds/thoughts, detached from their surroundings and disembodied from the flesh, as a sign of insolvability. At the same time, the abiding invocation of thought-transferability or their quantifiability in connection with the logics of AI-Algorithms for internet-communication (Martins et al. 2019) demonstrates, how far the notion of an "in-silico-cerebral subject" (Stollfuß 2014), even if unreachable, is enacted as part and target of individual enhancement in neoliberal power relations, with in- and exclusions deriving thereof.

558 REVISIONING SELF, TECHNOLOGY AND SOCIETY THROUGH THE CONTEXT OF NEUROTECHNOLOGIES

Marc Strotmann (Technical University Munich)

The fading interest in neuroscience in STS – whether from exhaustion or boredom with more tales from neuro-fields – is exemplified in the little attention paid to the expanding domain of neurotechnologies. Neurotechnologies (like Brain-Computer-Interfaces) are techniques for directly connecting the human brain with technical systems to monitor and modulate mental states. Often considered as methods "to read from and write in the brain" (Roelfsema et al. 2018), they circulate between neuroscientific, clinical, and psychiatric fields and affect a range of heterogeneous research areas – from engineering, to data science and AI. Although STS-related studies are available (Gardner 2017, Moutaud 2016), they have remained rather marginal, both in STS and in the neurosciences. Their reception is thus in clear contrast to the critical - and sometimes affirmative - studies on neuroscience at the beginning of the millennium (Dumit 2003, Vidal 2009, Rose/Abi-Rached 2013).
Above all, the voice of criticism orphaned by STS and the humanities has recently been occupied by an expanding neuroethics (Vidal 2019). In my contribution, I would like to take up this initial description in order to reflect on the moral economy (Daston 1995) with regard to inquiries into the neurosciences. I perceive the waning interest in STS on neuroscience to be problematic as it represents a blind spot. On the one hand, developments such as that of neurotechnologies demonstrate the continuing presence of neuroscience in several societal domains, constructing the brain as an object of engineering. On the other hand, ethical perspectives seem ill-equipped to initiate empirical studies of practice, culture, and conceptions in neuroscientific fields. Building on my own ethnographic research of the German neurotechnological landscape, I argue that analytic approaches from STS can offer empirically balanced studies to counter a hyped and tense ambition in neuroscience to intensify the relation between humans and technology.

Room N101 - Panel 007 ECOLOGICAL VALUING WHEN THE STAKES ARE HIGH: ON THE PRACTICALITIES OF NATURE-CULTURAL FLOURISHING

Session 2

75 COMPLICATING THE CIRCULAR ECONOMY: AN ETHNOGRAPHY OF HOW BIOWASTE TURNS / DOES NOT TURN INTO VALUE IN THE MUNDANE PRACTICES OF FINNISH BIOGAS PLANTS

Taru Lehtokunnas (Tampere University) Olli Pyyhtinen (Tampere University)

The circular economy (CE) is high on the political agenda both in the EU and globally. The vision of the CE is to build a more sustainable future through creating new innovations to 'design waste out of the system', thus enabling us to better live with human and non-human others. New business models and technologies for example to recycle nutrients and produce biogas from biowaste are called for solving the problems of capitalist exploitation of natural resources. Inspired by social scientific waste studies and valuation studies, we examine how Finnish biogas plants aim at transforming food that has once been defined as worthless biowaste into valuable biogas and fertilizer, at the same time seeking new avenues for utilizing these products. Our research is based on an ethnographic fieldwork in two Finnish biogas plants and on interviews with the staff of various plants as well as experts working in the field. We analyze the social and material transformations that biowaste undergoes in the mundane practices of biogas plants. By exploring biowaste as a fluid object (de Laet & Mol), we aim to show how the boundaries between unwanted waste and valuable product are not fixed, but rather they are blurred on several occasions in the business operations and production processes of the biogas plants. Biogas producers compete for biowaste, but there is not always enough demand for the gas and fertilizer that the plants produce, and thus the materials can be considered as problematic surplus on some occasions. In our analysis, we wish to make visible the clashes between ecological and economic ways of valuing. Ultimately, our research argues that imperfect circles, leakages, and non-desirable movements of value are integral to the everyday making of circularity.

824 ZERO WASTE, MULTI SPECIES: ON EMBODYING GOOD HYGIENE FOR A GOOD ENVIRONMENT

Mandy de Wilde (University of Amsterdam)

Much of today's environmental activism is aimed at tackling plastic pollution: that is, the harmful accumulation of synthetic materials in the environment. Domestic waste, among others, has huge environmental impacts, with landfills leaching the toxic substances much household stuff contains, oceans turning into dumping grounds for packaging, and incinerators and open burning grounds generating damaging air emissions. This paper focuses on how domestic waste is engaged as part of zero waste living. This lifestyle movement urges consumers to phase out waste in global supply chains by changing embodied routines to do with personal hygiene: that is, the principle of keeping yourself and your environment clean in order to maintain bodily health and prevent disease. Whereas concerns to do with hygiene arose in the 19th century with the discovery of germ theory, triggering an obsession with immunity and cleanliness, zero waste practitioners try to 'get over the ick factor' by communing with 'the good germs'. Hence, cleaning becomes a practice which invites intimate entanglements with microbes, instead of considering them a life-threatening enemy and killing them off. In this paper I present vignettes of cleaning with (1) eco-enzyme cleaners, (2) menstrual cups, and (3) bamboo tooth brushes. I show how zero waste cleaning offers practitioners opportunities to phase out plastic pollution in their bodies and homes, as well as the environment. In doing so, they engage in open-ended collaboration across species boundaries to create unruly ecologies of bacteria, and redefine hygiene in the process by foregrounding the flourishing of these ecologies. This extended, natural-cultural practice of cleaning values 'the environment' as something zero waste practitioners are part of, instead of external to.

606 SCALING PRECARIOUS POTENTIALITY. NEGOTIATING BETWEEN THE LAB AND THE WILD IN GENE DRIVE MOSQUITO DEVELOPMENT FOR MALARIA CONTROL

Marianne Mäkelin (University of Helsinki)

Gene drives are a technology to introduce genetic modifications in an organism in manner that will increase the probability of these modifications being passed on to coming generations. An application of the technology that currently largely shapes discussion around the conditions of the possible use of gene drives is using gene drive-equipped mosquitoes to alter or diminish wild mosquito populations to combat malaria.
Gene drives are a promise of a scalable technology, that is, a solution that can be expanded from the microscopic, genomic scale to that of entire mosquito populations and species. This is the cause of both the justification for the technology and concerns about it. Engineering gene drives entails practically oriented negotiations between genetic knowledge and the relational complexity of the lives, deaths, and reproduction of mosquitoes in their living

environments. Based on interviews and observations with and text material produced by people working in various positions with gene drives for malaria control, the paper examines how these negotiations are done as potentializing practices in gene drive research. The potentiality achieved is precarious: to retain it at each scale, the placement of mosquitoes as individual laboratory animals, as populations and as species into the more-than-human biopolitics justifying the intervention needs to be renegotiated.

Room N107 - Panel 015 CRAFTING ENERGY LITERACIES FOR DECOLONIAL POSTCARBON FUTURES

Dagmar Lorenz-Meyer, Faculty of Humanities, Charles University in Prague

Blackouts in the wake of extreme weather events, oil spills, solar micro-generation, landscape scars of fossil extraction, rising electricity prices and debilitating energy debt bring human energetic entanglements into sensibility, also in countries of the global North. In science and technology studies, energy humanities and related fields the concept of energy literacy has been used as a tool to examine people's energy knowledges, affect, and involvement in sustainable energy practices that are often reduced to energy savings. Critical of knowledge deficit models that blame subjects for their ostensible illiteracy, indifference or short-sightedness, the approach of material participation (Marres 2012) orients the analysis to everyday material practices such as collaborations with smart meters or solar panels, which some argue increase energy literacy (Ryghaug, Skjølsvold and Heidenreich 2018). And yet, an understanding of how energy is embedded in the production, transportation and disposal of products, and differentially fuels and disables lives that Sheena Wilson (2017) calls deep energy literacy, often remains elusive in extant conceptions of energy literacy (van den Broek 2019).
Such exclusions give renewed impetus to this panel's call for crafting 'mixed and differential [energy] literacies' (Haraway 1997) that perform diffractive readings of the matterings of photovoltaic cells, lithium batteries, plantation landscapes, and other colonial legacies. Barad (2001) calls agential literacy a learning to intra-act responsibly within the world. In a related vein Claire Colebrook (2012, xi) draws on Deleuze to suggest a viral model of literacies where 'each new attainment of literacy introduces difference into what counts as literacy', allowing us to sense more things, and enabling practices not of replication but of 'mapping – marking out new spaces, new dimensions, new lines of filiation'. The panel proposes to trace and bring into conversation such differential energy literacies. Topics include but are not limited to energy experiments (Maguire, Watts and Winthereik 2021); energy art and activism (Powell 2018); attention to how other life forms affect and are affected by energy infrastructure; the minor refusals, uncertainties, and deviations in the efforts to remember extractive energy ventures and unexpected solidarities; practices and legacies of land regeneration; new sensing practices through digital applications and platforms; and ostensibly unproductive practices and affects such as joyful energy wasting or squandering which might together open to non-extractive decolonial energy futures.
The panel welcomes work in progress and arts-based research.

Session 1

747 FIGURING ENERGETIC ENTANGLEMENTS: RETHINKING ENERGY LITERACIES AS DIASPORIC LITERACY

Dagmar Lorenz-Meyer (Faculty of Humanities, Charles University in Prague)

While our lives are fueled by energy, our imbrication with energy systems is notably hard to grasp. Energy flows are routinely black-boxed or expelled. This holds particularly for the 'non-thing' of electricity largely impervious to our senses – which proffers what Bell et al (2020) call a white masculinist techno-literacy that dominates energy research and development – including participation in 'renewable' energy. At the same time, infrastructure studies have shown, that the maintenance of epistemic energetic ignorance is in fact possible only for those who can take the availability of energy for granted. Minor literacies have developed unseen, for example in the collaborations of miners and pit-ponies that sense the dangerous cracks in coal seams – and surface as transgenerational hauntings that require new methods and sensitivities. This paper suggests that STS can learn from Caribbean feminist conceptions of diasporic literacy (Clark 1989) that are attentive to muted speech and allusion, particularly the ability to transverse registers and geographies considered apart, and remember informed by lived experiences. Diasporic literacy insists on the necessity of reshaping even destroying dominant language. Based on ethnographic and participatory photography starting from examining solar installations in the Czech Republic, the paper gathers alternative literacies that open to electric kinship, energetic entanglements and energy justice: the unexpected re-memory of dead Romani uranium workers or displacement in the wake of the Chernobyl nuclear accident; the ability to unfurl an energy infrastructure and see its future decomposition; the ability to sense one's energetic vulnerability and entanglement with others; and the capacity to squander electricity open to other ways of relating, practicing and belonging with energy.

328 DECARBONISING DOMESTIC HOUSING: THE ROLE OF THE CONSTRUCTION INDUSTRY IN DRIVING SOCIAL ACCEPTANCE.

Thomas Roberts (University of Surrey) Jill Timms (University of Surrey)

Heating engineers have a central role to play in the transition towards low carbon homes and increasing the social acceptance of new low carbon technologies. However, at present the heating industry in the UK and many other western economies, remains focussed on installing and maintaining fossil fuel-based systems. In this paper we explore the perspective of the heating industry on the transition to low carbon heating. We investigate current barriers to increasing the number of heating engineers installing air source heat pumps and consider possible ways to turn existing heating engineers from sceptics to advocates and champions of new low carbon heating technologies.

In October 2021 the UK Government announced plans to phase out the insulation of gas boilers in new buildings from 2025 and all insulations from 2035, with the intention of ensuring all heating systems in use by 2050 are compatible with Net Zero (HM Government 2021). To achieve these ambitious targets a huge transition is needed in which existing heating engineers are retrained and new ones are trained to install and maintain low carbon systems such as air source heat pumps. Industry reports suggest there are currently only 1,200 qualified UK installers, but to meet government targets at least 20,000 will be needed by 2025 and 40,000 by 2030. New courses and training opportunities are beginning to emerge in the UK, however the majority of prospective heating engineers and still choosing to train to install traditional systems and the UK public still default to gas when installing new boilers. In order for this transition to be successful the Government needs to simultaneously convince the heating industry that there is a viable market for these new technologies, significantly scale up training and convince the public to adopt alternatives to gas central heating.

776 WHAT SUBNATIONAL IMAGINARIES FOR SOLAR PV? EXPLORING PRACTICES, VISIONS, AND VALUES IN THE SWISS ENERGY TRANSITION

Léon Hirt (University of Geneva) Marlyne Sahakian (University of Geneva)

While the notion of sociotechnical imaginaries is well established in the literature [1], how to move beyond national imaginaries to those collectively held by actors at subnational levels is an emerging area of study – revealing tensions in relation to scales, but also power dynamics and opportunities for change. In this study, we uncover how diverse collectives in Switzerland (e.g., associations, public administrations) engage with solar photovoltaic (PV), with explicit attention on future imaginaries that are not (yet) institutionalised. Based on 21 semi-structured interviews and a media analysis (calendar year 2020), we distinguish between dominant and emerging imaginaries, depending on their level of institutionalisation. Three (sub)national sociotechnical imaginaries are identified: a dominant and institutionalised national imaginary, focused on cost-efficient and secure supply of energy, and reducing environmental impacts, prevalent in media discourses. Two emerging sub-imaginaries are also revealed: an adaptive stance, whereby more powerful actors (e.g., energy utilities) use a techno-economic rationale to accompany subordinate actors in the transition. This emerging imaginary displays early signs of institutionalisation as some core features are represented in the media, such as the idea of leading by example and accompanying civil society in the transition. We also found an emerging transformative sub-imaginary, which calls for deeper societal transformations. This emerging imaginary is not yet institutionalised as transformational aspects, such as changing power structures or experimenting news ways of living, were less salient in the media. Exploring multiple imaginaries and processes of institutionalisation enable a better of understanding of how emerging imaginaries may be represented through narratives, for instance, and how this may enable the affirmation of new practices, values, and visions.

[1] S. Jasanoff, S.-H. Kim, eds., Dreamscapes of Modernity: Sociotechnical Imaginaries and the Fabrication of Power, University of Chicago Press, Chicago and London, 2015.

810 NET ZERO AND THE PATHS OF LOCALIZATION: USING EXPERT INTERVIEWS AND PARTICIPATORY MAPPING TO INTERPRET ENERGY SYSTEM FUTURES

Christopher Groves (Cardiff University) Karen Henwood (Cardiff University)

Energy infrastructure, like infrastructure more generally, brings distant social actors into interaction, and forms the base of complex social and economic systems (Larkin, 2013). The relations woven into and around infrastructure shape the possibility space of future change, creating obduracy (Selin & Sadowski, 2015), not just because of infrastructure's material being, but because of how it reciprocally influences expectations about future developments. Decarbonising energy systems globally for Net Zero by 2050 brings a range of social actors together to negotiate the relations between potential infrastructural futures and the obduracy of existing infrastructure. Such negotiations reframe socio-energy systems as malleable as well as obdurate. At the same time, a focus on Net Zero constructs the temporality of decarbonization as one of urgency in the face of a'climate emergency'. Multiple tensions thus arise around the ways in which an emergency framing interacts with constructions of socio-energy systems as obdurate yet also malleable – and, in addition, the construction of the Net Zero transition as a 'just transition'.

One increasingly dominant way of framing energy system decarbonization trajectories is that of 'localization', the meaning of which is highly contested, however (Walker et al., 2021). In this paper, we report on how interviews

with experts and stakeholders involved with the FLEXIS project based in south Wales, UK, show that the meaning of localization is being negotiated. Bespoke maps of the Welsh energy system were used in the interviews as the basis of a participatory mapping task, providing data that shows how the meaning of localization is being constructed in relation to other socio-spatial dynamics, such as 'regionalization' (Soma et al., 2015). It is argued that such a socio-spatial approach to expert elicitation has particular value for understanding how the politics of infrastructure are framed through the construction of energy system futures.

Room N118 - Panel 021. CLOSING THE LOOP OF EMPIRICAL ETHICS: AWAY FROM NORMATIVITY AND CRITIQUE AND BACK AGAIN

Session 2

125 MAKING & DOING GOODS IN PRACTICE: A PROPOSITION FOR EMPIRICAL ETHICS

Carla Greubel (Utrecht University)

This paper considers the STS approach of making & doing as one possible resource for empirical ethicists who want to go beyond descriptions of the good in practice and engage in the field with an explicit commitment to improving the practices they study. Based on a close reading of a collection of making & doing accounts (Downey and Zuiderent-Jerak, 2021) I argue that this approach can be an inspiration for a more political form of empirical ethics for two reasons.
First, in making & doing projects, what needs improvement and how this can happen is neither externally prescribed, nor are making and doing scholars solely facilitating improvement from within. Problems and solutions, bads and goods, are defined in an iterative process characterized by negotiations, persistence, and adjustments to respond to both the local reality and the directions for improvement the scholars bring to the field. Second, making & doing is about creating attachment between the forms of the good the scholars propose (in making & doing these are STS knowledge contents enacted as 'STS sensibilities') and the practices, problems, and hidden resources present in the field. With these two elements, I suggest, making & doing approaches make it possible to let evaluations from beyond the context of study inform and co-create 'goods' in the field without losing empirical ethics' commitment to situated accounts (and consequently also situated creations) of everyday morality.

Throughout 2022, I will further test and reflect upon the potential of making & doing approaches for an engaged form of empirical ethics in my own making & doing research in one of the pilots of the GATEKEEPER project. In this research, I study and proactively engage with how health and ageing innovation pilots evaluate 'good ageing'.

801 'GOOD DAUGHTERS' OR 'MILKING COWS': EMPIRICAL ETHICS OF TRANSNATIONAL ELDER CARE IN INDIAN NURSE FAMILIES

Tanja Ahlin (University of Amsterdam / Amsterdam Medical Center)

This paper uses the empirical ethics approach to investigate how the norms of good elder care are transformed among families of Syrian Christian nurses from Kerala, South India. Drawing on more than eleven months of ethnographic fieldwork in India, Oman and remotely with people located in other countries, I look at how filial obligations of care have been re-shaped for nurses who migrate abroad for work. Care is analyzed in terms of everyday practices in which not just people, but also technologies are involved as active participants. I argue that as they are tied to international migration, money and digital technologies co-shape new norms of filial care by transforming the normative expectations of what it means to be a 'good daughter.' Instead of marrying early and thereby being relieved of caring duties for their parents, female nurses should migrate for work, send remittances to their parents, visit them regularly, and call them frequently via digital technologies. Their new filial obligations become established through the idioms of 'repaying the suffering and sacrifice' of their parents who had invested significantly into their daughters' education as nurses. However, some of my interlocutors argued that these daughters are not simply practicing elder care in new ways but are coerced into supporting their natal families materially; through international migration, they are turned into "milking cows" to provide for their parents and siblings while they sacrifice their own health, family and well-being. As a transdisciplinary scholar, I am compelled to consider how these findings could – and perhaps even should – go beyond empirical descriptions to protect young healthcare professionals from (potential) mistreatment in informal care they are providing to their families. In this context, what kinds of interventions are possible and how to put them into practice?

859 WANDERING WHILE SURVEILLED: USING EMPIRICAL ETHICS TO ADDRESS THE ROLES OF EMERGING DEMENTIA CARE TECHNOLOGIES?

Astrid Meyer (Aarhus University) Anders Albrechtslund (Aarhus University) Stinne Aaløkke Ballegaard (VIVE)

People with dementia often wander. This is considered problematic, because wandering in combination with disorientation in time and space, problems communicating verbally and little regard for immediate, physical surroundings, such as traffic, may result in dangerous, potentially lethal, situations. A way to help manage wandering is by using surveillance technologies such as GPS based trackers. However, the possibility of using such technologies raises questions about what to implement and how to use what is implemented. These problems dig into ethical challenges relating to balancing established care values such as safety, dignity and privacy, as well as, practical queries relating to the actual use of the technology.

This paper is embedded in the Danish research project, LIVSTEGN (translates to Signs of Life), which looks at the ethics of the possibilities and tensions rising from the use of surveillance technologies in dementia care work. In approaching this field empirical ethics offer a remarkable possibility for recognising how dementia is an illness that requires constant tinkering. A set ethical framework for using surveillance technologies would fail to acknowledge the reality of dementia as an ever changing illness. At the same time, the current legal and procedural framework in Denmark requires caregivers to spend both time and energy interpreting when and how to use surveillance technologies for dementia care. The field is filled with grey-areas. While these areas may facilitate tinkering, it also drains caregivers from important energy.

In this paper we aim to offer more guidance for how to use surveillance technologies for dementia care, without prescribing values. Here, we simultaneously draw on and challenge empirical ethics. In doing so, we make suggestions meant to evoke good dementia care, while contributing to how the STS community can address the roles of emerging surveillance technologies in caring for a vulnerable group.

Room N114 - Panel 026 SCIENCE DIPLOMACY FOR THE 21ST CENTURY? THE OLD, THE NEW AND THE WANTED

Joy Zhang (School of Social Policy, Sociology and Social Research, University of Kent) Saheli Datta Burton (Research Fellow, University College London)

Science diplomacy is not new, but its ambition, substance and actual delivery are constantly evolving. This is not least due to shifting paradigms of geopolitics, but also a result of the changing nature of contemporary science: how it is organised, who manages its framing and delivery. As such, while diplomacy remains one of the most ancient forms of statecraft, the delivery of science diplomacy no longer hinges on state or institutional actors, but can be shaped and conducted by assemblages of private and public interests. This may be especially true in emerging information and biomedical technologies, where science diplomacy not only shapes social uptake of a particular innovation that is already available, but also may have long-term impacts on the socio-political discourses that frames the future norm of that technology. Many international aids projects have also shown that science diplomacy can help ameliorate regional tensions, but can also whitewash neo-colonial intentions and aggravate global inequality. The rise of Global South actors and new conflicts of ambition both underlines the importance of science diplomacy and complicates its delivery.

In this session, we unpack the idea of ‘science diplomacy’ through examinations on past and emerging experiences. What does it mean to different communities? What are its real-life impacts, both in relation to the wellbeing of communities and to the development of science and innovation? Who are the emerging actors and leaders? What are the new norms and expectations of science diplomacy in global politics? And finally, what is ‘good’ science diplomacy and how can we promote it? In short, what are the old and new lessons, and what kind of science diplomacy do we want for the 21st century?

We invite both empirical and conceptual reflections. Papers that focus on non-state actors and/or on under-discussed regions, and papers with novel research methods are particularly welcome.

Session 1

25 EMPIRES OF THE MIND AND TRICKLE-DOWN SCIENCE: CHALLENGES AND OPPORTUNITIES IN 21ST CENTURY SCIENCE DIPLOMACY

Greg Whitesides (University of Colorado - Denver)

Scientific cooperation and non-cooperation became instruments of diplomacy during WWII, upsetting the traditional internationalism of science. After the war, advanced nations gradually restricted access to research with commercial or national security applications, creating "empires of the mind" through proprietary rights and classification. At the UN Conference on Science and Technology for Development (1979), African delegates criticized the new system of "trickle-down science," but the Trade-Related Intellectual Property Rights agreement (1995) strengthened it over a decade later. Today, scientific cooperation is shaped by the extent to which knowledge is considered an international public good, commercial property or state secret, and thus negotiating between these over-lapping spheres is essential to successful diplomacy. At the same time, opportunities for engagement also exist outside of a diplomatic framework and non-state actors can be invaluable in establishing fruitful scientific relations. The brief history of COVID vaccines, for example, reveals the geopolitics of medical science: academic knowledge of the virus is freely available; the invested companies protect their intellectual property; nations compete to use vaccines for international influence; and the global system struggles to address the needs of the poor, where private, non-state efforts may prove more effective. In the search for clean energy, other approaches have been tried: through the Clean Energy Research Center, American, Chinese and other national corporations share pre-competitive research while maintaining exclusive rights to applications. Building upon previous work – Whitesides, Science and American Foreign Relations since World WWII (Cambridge UP, 2019) – this paper examines contemporary cases to illustrate the challenges and opportunities in scientific collaboration between developed and developing nations.

32 IMMUNE TO GENEROSITY? SOCIAL AMBIVALENCE TOWARDS SCIENCE DIPLOMACY IN THE GLOBAL SOUTH

Joy Zhang (University of Kent)

Science has always been an instrumental element in modern international relations, both between the Global North and the Global South and among Global South countries. Yet a country's capacity to export scientific expertise and technological solutions does not automatically translate into its soft power. It is not uncommon for science diplomacies to meet with lukewarm public response, social skepticism, or even resistance in the recipient country. A most recent example is the COVID vaccine diplomacy, which has sparked what I termed 'selective vaccine hesitancy' in many parts of the world. This is, a form of vaccine hesitancy that is not rooted in the skepticism of vaccine science per se. Rather the publics' seeming unappreciative 'immunity to generosity' could be an accumulative result of collective memory and collective thinking, such as memories of colonial exploitations, resistance to regional expansions, distrust in local political or health authorities, and of course epistemic biases.

Taking vaccine diplomacy as an example, this paper unpacks the social ambivalence towards science diplomacy, especially in the context of South-South relations. More importantly, this paper investigates how these ambivalences and their mitigations tell us about the cosmopolitics of science.

1041 SCIENCE, DIPLOMACY, AND GEOPOLITICS AT CHINA'S ARCTIC RESEARCH STATIONS

Trym Eiterjord (Max Planck Institute for the History of Science)

This paper examines the role of research stations in science diplomacy. It looks at the diplomatic activities surrounding the establishment of Chinese research stations in the Arctic region and how China has leveraged joint research stations in its bilateral diplomacy with Arctic states. Through investigating the geopolitical backdrop against which these stations are being established, the diplomatic negotiations facilitating them, and the scientific activities that these stations are platforming, this paper looks at how science and geopolitics come to be tangled up in the construction and operation of physical research infrastructure. The paper takes conceptual cues from political geography and geographical studies of science in order to foreground the geopolitics of joint research stations and show how such stations, while often presented as benign platforms for scientific collaboration, are at the same time productive of anxieties over national security and territorial sovereignty. Through media analysis and interviews with stakeholders in the respective countries, the paper explores how these stations are perceived by local researchers and national governments. I find that in all cases, local researchers emphasize the scientific benefits while government stakeholders are concerned primarily with the security implications of partnering with China to establish these stations. I conclude with a discussion confronting overly optimistic visions of how science can transcend or circumvent global geopolitics, arguing instead that science diplomacy, often touted as a politically neutral alternative to conventional forms of diplomacy, can itself be productive of geopolitics. Moreover, by analyzing Chinese science diplomacy, this paper sheds light on how Chinese scientists and, by extension, Chinese research infrastructure, are increasingly being scrutinized by Western governments and how this securitization is affecting the purported efficacy of science in diplomacy in the twenty-first century.

Room N105 - Panel 032. EUROPEAN UNIVERSITY NETWORKS AND IMAGINARIES OF LEARNING INFRASTRUCTURES

Carlos Cuevas Garcia (Technical University of Munich) Lukas Fuchs (Eindhoven University of Technology) Gunter Bombaerts (Eindhoven University of Technology) Monamie Bhadra Haines (Technical University of Denmark) Sebastian Pfotenhauer (Technical University of Munich)

In September 2017, French president Emmanuel Macron resuscitated an old idea that leaders of a nascent and re-configuring European community had envisioned in the postwar years (Gunn, 2021): the founding of a European university. The European Commission rapidly took up the idea and launched the European Universities Initiative, dedicating a budget of €287 million to establish nearly 40 European university networks. The networks have the goal of enhancing "the quality, inclusion, digitalisation and attractiveness of European higher education" (European Commission, 2020) and of serving as a mechanism to tackle challenges such as the Covid-19 pandemic and climate change. More specifically, they intend to facilitate the adoption of co-creation, challenge-based education, lifelong learning, and responsible research and innovation (RRI) in participating universities, while at the same time creating virtual campuses, joint curricula, and further developing the European identity of staff and students.

The European Universities Initiative thus represents a key site of STS inquiry. How are these future communities similarly or differently imagined within and across different consortia and hosting states? What is the historical precedence of this form of community building? How are they mobilising and infrastructuring STS knowledge and RRI practices, and what constraints are encountered by practitioners? What are the changing perceptions of the role of universities in society? How are pan-European learning infrastructures ideated, implemented and maintained? What is the role of STS in contributing to the formation of European and other socio-technical identities and what normative implications does this involve?

This panel aims at addressing these and related questions by bringing together scholars involved in one way or another in the European Universities Initiative and those who can provide critical insights drawing on their understanding of other European research and innovation infrastructures. The panel welcomes submissions from scholars who have studied other traveling concepts ideated by the European Commission such as co-creation, RRI, Digital Innovation Hubs, EIT, Competence Centers, ECTS, etc.

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Session 1

792 BOOSTEUROTEQ: STUDYING RESPONSIBILITY AND CO-CREATION AT TECHNICAL UNIVERSITIES

Lukas Fuchs (Eindhoven University of Technology) Carlos Cuevas-Garcia (Technical University of Munich)

The European Universities initiative has launched the creation of European Universities to develop the European education sector and to enhance institutional capabilities for tackling grand societal challenges, such as climate change. One of these — the EuroTeQ Engineering University — emerges from six European universities of technology (Technical University of Denmark, Eindhoven University of Technology, École Polytechnique, Technical University of Munich, Czech Technical University and Tallinn University of Technology). In addition, the BoostEuroTeQ project launched in September 2021 and aims to accompany the creation of a EuroTeQ university by studying the ways in which responsibility in education and co-creation is understood, implemented and transformed at the six partner universities.

This paper discusses the institutional and theoretical background to the BoostEuroTeQ project and presents the initial findings and methods. Technical universities make a particularly interesting case study as they do not merely serve research and education, but in addition often have a more direct impact on society and economy through new knowledge and technology. In this context, the study of "co-creation and learning spaces" or "learning & innovation hubs" that facilitate co-creation activities at universities is particularly relevant as they align research, education and innovation. How have these organisations and networks understood their societal responsibility in the past and what is their role in making universities aid in the fight against grand challenges? The paper will conclude by reflecting on the interdisciplinary nature of the project, combining STS studies with philosophy and technology management studies.

791 DEVELOPMENT OF COMPETENCIES THROUGH TRANSDISCIPLINARY RESEARCH AND EDUCATION – A THEMATIC REVIEW

Sarju Sing Rai (Athena Institute, Vrije Universitiet Amsterdam, The Netherland) Evert Grol (Athena Institute, Vrije Universitiet Amsterdam, The Netherland) Marjolein Zweekhorst (Athena Institute, Vrije Universitiet Amsterdam, The Netherland)

In order to prepare students to address complex societal challenges of the 21st century, more and more higher education institutions are offering transdisciplinary education (TDE) that provide students the opportunity to learn from, collaborate, and co-create with both academic (multidisciplinary) and non-academic (societal) actors. Different universities across the world have amassed valuable experience in such transdisciplinary practices where stakeholders pertaining to science (academicians, students) and society (industry, community actors) collaborate for knowledge exchange and production. However, competencies garnered by students through such transdisciplinary practices in research and education, as well as insights on how such competencies are trained have not yet been well documented.

The aim of this review was to explore what competencies/skills students develop through transdisciplinary research and education at Universities and how those competencies are trained. A thematic literature review was conducted in accordance to the PRISMA guidelines and relevant articles related to competencies development through transdisciplinary research and education were selected from two databases – EBSCO and Web of Science. A total of 28 articles were selected for analysis and synthesis.

This study identified three main categories of competencies that students develop through TDE: (1) changes in mindset, (2) academic/normative skills, and (3) interpersonal competences. Furthermore, several combinations of didactic methods were found to be used in addressing TDE at universities, which were found to range on a spectrum of transdisciplinarity. However, the direct links between gained competences and the use of particular TDE method(s) was not found to be clear and conclusive. As a wide range of competences and didactic methods were identified and no definite connections could be made, it is recommended to investigate this interplay further in order to confirm such linkage. Further, this study recommends the development of a predefined framework for addressing transdisciplinarity in higher education that the universities can adopt.

806 INTRODUCING THE EUROPEAN ENGINEERING LEARNING INNOVATION AND SCIENCE ALLIANCE

Maria Rentetzi (Friedrich-Alexander-Universität Erlangen-Nürnberg)

Whereas in the business context the phenomenon of international collaboration is well researched (Holtbrügge 2004), the special business case of inter-university alliance building received less attention. However, in these days, the European Universities initiative puts the topic of international university alliance building at the center of attention (Gunn 2020). Based on two calls for European University initiatives in 2019 and 2020, the European Committee selected 41 out of 116 project proposals. The initiatives involve 279 higher education institutions from 26 member states (European Comission 2021). Additionally, these 41 European University alliances build national and transnational “networks of networks” (Gunn, 2020). One of the selected European Universities selected in the second round is the EELISA alliance that consists of nine higher education institutions from France, Germany, Hungary, Italy, Romania and Spain. EELISA has a focus on an innovation and engineering (EELISA 2021) and therefore offers a perfect environment to research and work on EU tech diplomacy, providing training on geopolitics of technology and its impact on society. Moreover, EELISA follows a community – based approach towards learning, research and innovation and building an ecosystem to enhance EELISA's role in international actions is the major goal of the EELISA Community “Technology Diplomacy & International Cooperation”. This presentation will provide an introduction to the EELISA alliance.

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1001 EELISA EUROPEAN UNIVERSITY

Ignacio González Tejada (Universidad Politécnica de Madrid) Juan Manuel Muñoz Guijosa (Universidad Politécnica de Madrid) Alberto Garrido Colmenero (Universidad Politécnica de Madrid) Asunción Gómez Pérez (Universidad Politécnica de Madrid) Sofia D'Aguiar (EELISA European University)

Abstract:
This communication introduces one of the European University alliances: EELISA - European Engineering Learning Innovation and Science Alliance.

Room N112 - Panel 033 FUTURES AND NARRATIVES IN HEALTH CARE POLITICS AND POLICY

Tineke Kleinhout-Vliek (Utrecht University) Conor Douglas (York University) Eva Hilberg (University of Sheffield)

Health care systems worldwide face significant pressure. While one might immediately think of the COVID-19 pandemic, challenges such as high costs, medicine shortages, and dwindling solidarity predate it. At the same time, the field is host to much innovation in terms of, for instance, personalised medicine and drug repurposing, but also experimentation at the political and policy level with conditional reimbursement and real-world data.

Whether through innovation or more institutionalised routes, meeting challenges and needs is strongly dependent on the futures and narratives invoked. STS scholarship shows us that both futures and narratives are co-constitutive of social orders: they are highly political. A patient telling their story in an attempt to gain access to costly treatment is but one example - a politician expounding on the alleged untenability of escalating costs is another. Because futures and narratives are contextualised and individualised yet dependent on shared understandings, they are anything but straightforward in a field populated with powerful actors with diverging interests.

We invite papers that critically examine the role of futures (including expectations, visions, and imaginaries) and narratives (including folk theories and stories) and their consequences in the politics and policy of health care. Topics may include but are not limited to:

- Health care system sustainability and solidarity
- Prototyping and other forms of socio-material innovation
- Patient groups, needs-based activism, and patient and public engagement
- Forms of knowledge, including experiential expertise and big or real-world data
- Policy experimentation and alternative regulatory frameworks for access and coverage
- R&D partnerships across public, not-for-profit, and private sectors

Session organizers:
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309 FROM ‘GATEKEEPER’ TO ‘FOREST RANGER’: THE NARRATIVE WORK OF A DUTCH GOVERNMENTAL AGENCY IN ENACTING SUSTAINABLE FUTURE HEALTHCARE

Rik Wehrens (Erasmus University) Bert de Graaff (Erasmus University)

The role of future narratives in policy making is long recognized in interpretive policy sciences and STS, as is the need to critically analyze whose narratives and futures are enacted in the discursive efforts of policy makers (and with what consequences). In this analysis, we ‘zoom in’ on the narrative work of a Dutch governmental agency (the ‘Healthcare Institute’) responsible for healthcare coverage and reimbursement decisions at a moment when new technologies and personalized medicine create new uncertainties. While the Institute is expected to advice ex-ante about novel forms of treatment and care to include in the basic benefits package, it is increasingly confronted with lack of ‘robust’ evidence. A proposed solution for this tension is the regulatory framework of ‘cyclical healthcare coverage decision-making’, allowing more flexibility in coverage decisions (e.g. through forms of conditional reimbursement pending on ‘real-world data’).

Despite its appeal, this mode of decision-making remains an idealized future vision. Yet it would be too easy to dismiss this narrative as ‘wishful thinking’. We focus on the persistence of this narrative in spite of its limited translation to concrete practices. Our analysis is based on semi-structured interviews with key stakeholders and document analysis. We argue that the alternative regulatory framework of ‘cyclical healthcare coverage decision-making’ functions as a narrative for future-making. We elucidate structural characteristics of this narrative to explore what future(s) are being mobilized, by whom, and through what resources. A main characteristic relates to the collective duty of Dutch citizens to keep the system sustainable for future generations. This calls for forms of ‘data solidarity’ of patients, more standardized forms of data collection by healthcare professionals, and a more proactive and systemic role of the Institute (i.e. a shift from ‘gatekeeper’ to ‘forest ranger’). We also pay attention to tensions and inconsistencies within this narrative.

435 NARRATIVES OF CONTROL AND PRACTICES OF FLEXIBILITY: MANAGING SARS-COV-2 ACROSS EUROPEAN BORDERS

Alena Kamenshchikova (Maastricht University)

National state borders have been portrayed in European policy narratives as one of the key instruments in controlling the spread of SARS-CoV-2 since the beginning of the pandemic in 2019. Such a portrayal can be explained by the nature of healthcare and infectious disease control infrastructures that are always state-oriented. Cross-border mobilities of patients, specialists, policies, guidelines and data have always been complicated and hindered by the infrastructural organization of national systems. However, the spread of infectious diseases with pandemic potential, such as SARS-CoV-2, have challenged the rigid narratives that equate infectious disease control with nation-state security. The experiences of SARS-CoV-2 have demonstrated that the spread of the virus follows the lines and practices of human connections and interactions, both within, and across, different countries. Therefore, while public health policies of SARS-CoV-2 in many European countries have continued to reproduce narratives of national security and control, public health practitioners have had to adapt their practices to the mobile realities of modern living; one where people often have to travel daily from one country to another for work or study. To reflect upon these two narratives of control and adaptation this paper analyses how public health professionals located in mobile border regions between the Netherlands, Belgium and Germany have been addressing the SARS-CoV-2 pandemic, and how they worked around the security narratives of national policies. The empirical data collected from 27 interviews in 2021 help to map a set of manifested disjunctions between SARS-CoV-2 narratives built in public health policies, and the realities of public health practices. Reflecting on the empirical results, the paper attempts to imagine the potential futures of these disjunctions and the possibility of their bridging.

135 JUXTAPOSED RESPONSIBILITIES: EXPLORING STATE-SOCIETY RELATIONS IN AUSTRIAN HEALTHCARE POLITICS THROUGH STORIES OF INFECTION AND CURE

Lisa Lehner (Cornell University)

Austria is one of Europe's classic welfare states (Esping-Andersen 1990) with a deep history of public healthcare and a solidarity politics rooted in healthcare decision-making. The values undergirding society at large play out in culturally specific ways in decisions about healthcare access and (systemic) exclusions.
This is also true in the case of Hepatitis C virus infections, an illness that has famously attracted stark differentiation between those "innocently" affected through no fault of their own on the one hand, and the "guilty" on the other–particularly people who inject drugs. Using examples from my ethnographic study of Hepatitis C and its pharmaceutical "cure" in Austria, I will approach the question of state-society relations and their meaning–a particular "welfare politics of life," to paraphrase Fassin (2009)–through the example of two of my interlocutors faced with the same situation. After curing their infections, which both had incurred through faulty handling of blood products in a donor facility during the early 1980s, Dietrich and Herbert reflect on what they are or are not "owed" by the state. Their differing conclusions add depth and a deeply cultural valence to the interactions of pharmaceutical cures and the state's mandate to assure the health of its citizens. In my conclusions, I will also use the story of Sebastian–also cured and a person with a history of drug use–as a cross-cutting example.
In so doing, I will use juxtaposition as a method of critical storytelling (Venkat 2021): allowing the stories to help illuminate certain taken-for-granted aspects of the Austrian welfare state, its deep histories, its roots in the interwar era, its relation to eugenics and imaginations about its (neoliberal) futures. I will especially focus on state-society relations, as well as the question of deservingness and the responsibilities of the state as we continue through the Anthropocene.

52 ETHICO-RACIAL IMPERATIVES: MOBILISING RACE AND ETHICAL ACTION IN IMAGINED BIOMEDICAL FUTURES

Ros Williams (University of Sheffield)

Who should be able to access lifesaving healthcare? In the UK, with its nationalised healthcare system, the answer–in theory–is any UK citizen. However, as across the global north, a key treatment for blood cancer is not readily available to everyone; whilst many find a matching bone marrow stem cell donor on donor registries, others do not. Often, it is racially minoritised patients who end up without donors. This is understood to be because there are too few racially minoritised donors on the stem cell registry.

This paper takes two moments from this context–third-sector recruitment work, and the individual patient narrative appeal. Through these, it explores how race and ethical action become intertwined in an effort to recruit minoritised donors, and create a particular future in which a racially diverse public can access an important health resource. Through analysis of ethnographic, documentary and social media data, the paper argues that this work relies partly on framing donation as a duty of being part of a racialised community. I describe this as an "ethico-racial imperative", in which both race and responsibility intertwine to compel participation in the biomedical project of stem cell donor registration. At the core of this work is a particular imagining–espoused predominantly by

private citizens and the third sector–of future biomedical provision which is expressly constructed around racial equity. This future, we might infer, can be achieved by minority engagement with the practice of donation, leaving little space for refusal or resistance, however legitimate it may be (Benjamin, 2016).

The paper extends an invitation to consider how race and ethical action coalesce in contemporary biomedical politics, from encouraging vaccine uptake to preventative screening. It ends by considering some of the sociopolitical consequences of the distribution of responsibility onto (racialised) communities themselves.

161 STANDARDIZING PATIENT ENGAGEMENT IN DRUG DEVELOPMENT: THE 'FUTURING WORK' OF DOCUMENTS

Claudia Egher (Health, Ethics and Politics, Maastricht University)

Initiatives to substantially increase patient engagement in drug development have been recently accompanied by growing calls for standardization due to considerable uncertainties about how to best perform patient engagement and use it in drug marketing applications. Although standards are framed as neutral solutions, they constitute powerful tools through which specific visions of the future of patient engagement in drug development may be imposed. By focusing on materials developed by the Patients Focused Medicine Development (PFMD), a multi-stakeholder group founded in 2015, this paper therefore studies what precisely such initiatives seek to standardize, what changes are thereby operated, and to what effects. Building upon Latour (1987) and Asdal (2015), the paper takes a material-semiotic approach, whereby the PFMD materials studied are seen as influential actors, which can work upon and transform issues.

The findings indicate that these materials seek to standardize a new beginning for the drug development trajectory, which they re-locate in the patients' needs and preferences, and the development of long-term relationships between researchers and patients, for which they prescribe specific methods and tools. Asdal's (2015) perspective on documents is extended by showing that these materials do not only modify issues, but actively engage in shaping these issues' future. They do what we call 'futuring work' by transforming the type of patients envisioned, by requiring the diversification of the researchers' skills, and by making patient organizations central actors. Whereas these materials may thus help democratize drug development, they may also contribute to new types of inequality, as their global scope and focus on epistemic arguments allow for important exclusions to be performed and prevent local issues and differences from looming large. Such 'futuring work' requires further scholarly attention, as it may be particularly consequential while practices are still fluid.

Room N102 - Panel 040. HACKING EVERYTHING: THE CULTURES AND POLITICS OF HACKERS AND SOFTWARE WORKERS

Session 2: Hacker Politics and Programmers

777 PLAYING WITH FIRE: RE-IDENTIFICATION HACKS AND ORGANISATIONAL MICRO-POLITICS

Schmutzler Jan (Ruhr-Universität Bochum) Sørensen Estrid (Ruhr-Universität Bochum)

Data anonymisation has long been the central measure for social scientist to protect the privacy of the subjects from whom they collect data. Recent years computational methods have made it increasingly easy to combine data sets, which also makes it easier to re-identify individuals in anonymised datasets (Rocher et al, 2019). No standard procedure exists for testing if anonymised datasets are sufficiently protected against re-identification (Emam et al, 2015). In practice the method is re-identification attacks.
We report from a white-hat re-identification hack conducted in collaboration with an organization with a long tradition for hosting social science data, which provided it with good reasons to be confident that its data are sufficiently protected against re-identification. The hack was seen as a young student's innocent exercise. But then the in hindsight foreseeable moment materialized, when his algorithm appeared to be able to de-anonymise the data.
Our contribution discusses the repercussions of the re-identification hack. Both the organization, the student and the ethnographer had been naïve about the hack. They had been playing with fire and ignited mutual disbelieve and mistrust. The student and the ethnographer were now approached as potential criminals with one foot in jail. The organization found measures to secure its data sets, yet the ethnographer remained disconcerted about the already published data.
Based on the empirical analysis, we address hacking and attacking more generally as methods for testing re-identification protection. Although the method seems technically and ethically sound, it has side-effects that are severely aggressive to social and organizational relations (cf. Schmitz-Berndt & Schiffner, 2020). In the case in question, we sought to mobilise "careful" practices to remedy the damages done, and we discuss if "careful hacking" has potentials for developing less harmful re-identification testing, or if it is indeed an oxymoron.

935 HACKING DECISION-MAKING

Maja Urbanczyk Urbanczyk (NTNU)

On more and more occasions, political decision-makers decide over software that is to be used by the public. In these situations, decision-makers rely on expert knowledge and risk assessment, in order to make informed decisions. For software decisions, the needed expertise comes from IT and IT-security experts and software developers – also known as: hackers. The degree of trust that IT expertise receives from political decision makers is highly dependent on the contextual framing of the people 'holding' the expertise: IT-experts are regarded as significantly more trustworthy than hackers by the public as well as politics. At the same time, political decision-makers need to acquire trust from the public. This is likely to be more complex when more information and opinions on a topic are available. With knowledgeable lay-persons posing themselves as experts within the discussions, acknowledged experts being vilified as so called 'black-hats' (hackers with little ethics) and decision-makers walking on a thin line between technocracy/scientism, 'the greater good' and their own interests. It is complex for anyone to decide, which expertise to follow and whom to trust. In some cases this even ends in expertise being disregarded or even discarded by decision makers. Interestingly, it happens that they frame it afterwards as not having known about a technology's downsides. In order to understand the many layers of construction and attribution of non-knowledge and ignorance, I deconstruct these kinds of situations and what I call the 'network of trust' in a qualitative, discursive study. Deconstructing and analyzing decision-making processes with a focus on the role of non-knowledge and ignorance will help to shed more light on the complexity of technological governance. Additionally, this novel approach shows how ignorance is not only a reason for subordination, but also potentially a source of power.

355 CHAOS REIGNS: HACKTIVISM AS HEALTH DATA ACTIVISM

Annika Richterich (Maastricht University)

This paper discusses how the Chaos Computer Club, a German hacker association, engaged in 'health data activism' during the first two years of the COVID-19 pandemic (2020-2021).[1] Hackers' technopolitical activism tends to be neglected in public debate, partly since hacking is often equated with cybercrime. Yet, civic hacking communities have shown a longstanding dedication to activism relevant to public interests and technopolitics. In early 2020, hacker communities therefore also started scrutinising technology meant to tackle issues emerging during the COVID pandemic, often by collecting health-related data. The paper methodologically draws on a case

study approach: it focuses on the Chaos Computer Club (CCC), analysing public statements, open letters, and reports. Conceptually, it frames the CCC's practices as data activism, specifically health data activism. It notably expands on Milan and van der Velden's (2016) continuum of proactive and reactive data activism. Within the proactive/reactive continuum, it stresses the CCC's 'interventional-regulative activism'. The latter notion refers to practices of data activism involving interventional, technical assessments of data-intensive technology, using these to critically yet constructively articulate regulative requirements and demands. I argue that the CCC's health data activism oscillates between reactive and proactive data activism, by engaging in interventional-regulative practices: the association intervenes in public debate concerning the politics of covid-technology, while also directly interacting with and holding policy makers as well as technology corporations accountable. Thereby, this paper lends further weight to the importance of civic technology expertise and engagement - especially during public health crises, when tech-solutionist approaches are being promoted by appealing to the hope of them contributing to the 'greater good'.

[1]Formally, the CCC is an association registered in Germany ('eingetragener Verein'). However, while its central office is in Hamburg, there are also 25 regional chapters plus multiple local groups ('Chaos-Treffs') in Germany, Austria, and Switzerland.

113 ENGINEER-AS-A-SERVICE: WHAT IS THE FUTURE OF ENGINEERING PROFESSIONALS IN THE DIGITAL WORLD?

Ola Michalec (Bristol University)

For decades, nuclear plants, power stations, or wastewater facilities were safe from the hype of digital innovations. These industries have traditionally been operated by industrial control systems – fairly simple computers using binary logics to enable the movement and sensing of engineering machinery. Such technologies were disconnected from the internet and operated on-site by manual workers. With the advent of "the Fourth Industrial Revolution" (Schiølin, 2020) engineering processes are about to gain sophisticated computing capabilities, from remote control enabled by the cloud or predictive maintenance thanks to ML algorithms. Moreover, industry experts (Cisco, 2018) have already announced that modern computing is "blending" with legacy engineering technologies. But who is doing the blending and revolutionising? Drawing from the approaches in STS and Computer-Supported-Cooperative Work (Slayton and Clark-Ginsberg, 2018; Jenkins et al., 2020), our research looks at the collaborative practices between engineers and software workers (Michalec et al., 2020; Michalec et al, 2021). Based on the case study of the implementation of cyber security regulations in critical infrastructures, we investigate how practitioners navigate tensions between the priorities of modern computing (security, connectivity, innovations, interoperability) and traditional engineering (safety, reliability, availability). Ultimately, we argue that digital innovations entering the world of critical infrastructures will reconfigure the responsibilities and training needs for engineers to come. This, in turn, creates novel ethical and political considerations for the profession, which should inform the future STS research agenda.

734 "TINY TOOLS" AND "LITTLE LOOPS": SOFTWARE ART AS CARE-FUL SOFTWARE PRACTICE

Timothy Cowlishaw (BAU College of Arts and Design, Barcelona)

Whether as part of giant technology corporations or open-source software projects, software developers are increasingly responsible for defining, building, and maintaining the infrastructure of our social world, and much critical and anthropological attention has been paid to the ways in which the cultures and practices of software development influence the materiality and embedded politics of these infrastructures. However, less critical attention has been paid to software development deployed to less instrumental ends, in particular, creative and artistic practices that use software as a medium. We claim, building on Nick Seaver (2021)'s work on care and scale as contrasting values in the development of software systems, that paying attention to such personal, creative software practices provides a valuable opportunity for a deepened understanding of cultures of software development in general, by articulating and making visible the differences between the development of aesthetic and instrumental software objects - a distinction which is elided when 'software development' is studied in more general undifferentiated terms. In addition, we argue that software art and the creative practice of software development offer a useful means of interrogating the ontology of software and digital artefacts, arguing that such practices are a form of ontological designing (Willis 2006) producing digital objects (Hui 2016) which serve to expose the ontology and embedded politics of software artefacts and systems more generally. Finally, we argue that such creative practices constitute a care-ful (Puig de la Bellacasa 2017) approach to software development, building on the Critical Technical Practice of Philip Agre (1997), offering one example of how critical and ethical considerations might be usefully incorporated into professional software development practices.

Room N106 - Panel 041 SEEING IS BELIEVING: VERACITY AND VERISIMILITUDE IN SCIENTIFIC VISUALIZATION

Alison Gerber (Lund University) Isak Engdahl (Lund University) Alexandra Middleton (Lund University) Tobias Olofsson (Lund University)

Scientific visualizations can bring the relationships between knowledge, understanding, and belief into sharp focus. In bringing certain elements and relations into focus, they also render others blurry, fuzzy, or obscured. Contemporary advances put algorithmically supported imaging and visualization technologies in the hands of more and more diverse image-makers, while older ways of seeing continue to inform the ways that we create, read and interpret new kinds of images.The literatures on representation and objectivity offer nuanced views on the ways that scientific images are made legible, credible, and authoritative – as well as the ways that they are misinterpreted, questioned, and appropriated. Given a fast-evolving and increasingly dense landscape of images, we propose to revisit basic issues in scientific representation: how do the makers and viewers of scientific visualizations negotiate between veracity – conformity to the facts of the situation – and verisimilitude – the appearance of truthfulness?

We invite abstracts for presentations focused on historical and contemporary forms of scientific visualization, from the hand-drawn to the algorithmically generated, for a discussion of the ways that we come to believe (or question) our own eyes – and the ways that we convince others to believe theirs. We are open to both traditional paper presentations and alternative approaches to presentation and discussion that can be made to fit the logistical constraints of the conference-room-panel-format and limited space and technology available there; proposals for short film screenings, performances, interactive presentations, and other interventions are very welcome.

Session 1

635 DISAPPEARING SCIENTIFIC VISION: COMPUTATIONAL METHODS AND INFRASTRUCTURES OF CODE IN BIOSCIENTIFIC PRACTICE

Rebecca Carlson (Toyo University)

Forms of knowing in biology are founded on sighting and the production of data images that come to stand in for organisms; once experimentally visualized, life itself is made open to scientific interpretation. Bioscientific laboratory practice also involves the concentrated practice of “inscription” (Woolgar and Latour, 1979), a transformation of scientific vision into materialized images and texts which come to be sedimented, over time, as fact; as described by Knorr-Cetina, laboratory-produced images used to be held up to the light by scientists and examined during conversational exchanges that would fix their meaning (1990: 260). Today, the growth of bioinformatics is transforming notions of scientific visuality and notational practices previously so routine, where images are disappearing into computational code and its material infrastructures. This presentation draws on interviews and ethnographic data collection in a Japanese bioscience laboratory to examine two key examples: first, genetic studies where large amounts of DNA sequence data are self-contained in files that are rarely opened or examined directly by bioinformaticians but are inserted instead into pipelines to be "seen" by code; second, medical images such as x-rays which are removed from direct visual inspection by scientists and encased in algorithms, where deep learning techniques are used to “see” and order minute, unobservable patterns. In this way, data images are removed from the sight of scientists, made invisible and settled behind computational forms of analysis, and the web platforms and tiered infrastructures which help replicate, transfer and analyze them. In what way then do these practices displace the authority of the scientist, as it is transferred to algorithms? And how do these new practices equally transform the way scientists use their vision to “convince...someone else to take up a statement, to pass it along, to make it more of a fact” (Latour 1986)?

451 SCIENTIFIC REPRESENTATIONS OF SLEEP IN THE MEDIA: THE URUGUAYAN CASE

Cristina Misa Knuth (Universidad de la República, Facultad de Psicología) Andrea Bielli Pallela (Universidad de la República, Facultad de Psicología) Virginia Rodríguez Otero (Universidad de la República, Facultad de Psicología)

In recent years, scientific images of sleep have reached the media in Uruguay. Some respond to the dissemination of research results on sleep and chronotypes, others to commercial interests of companies focused on sleep.
The dissemination of scientific research results in the media poses the challenge of transforming scientific facts into textual, graphic and audiovisual material with an appropriate language for the audience. The images and their explanation seek to produce an effect of veracity in the viewers that allows them to appropriate the message. In this way, the possibility of objectifying types of people derived from the facts received from science and medicine emerges, creating “objective-selves” (Dumit, 2004) as types of sleeping subjects derived from these scientific facts disseminated by the media.

This paper aims to review how scientific images of sleep are summoned to generate credibility about the biomedical sleep model and its relationship with our daily life, generating categories of people as possibilities of objectification of the self.
For this purpose, three audiovisuals available on the Internet produced between 2012 and 2021 and some broadcasted on television will be analyzed. They provide basic definitions of sleep and other topics, such as the importance of sleep, the consequences of not sleeping well and suggestions for getting a good night's sleep. We will focus on the different forms of representation of scientific data, such as diagrams, graphs, electroencephalograms and brain images that appear in the videos.
We intend to contribute to the STS field with the analysis of a representational practice that, by promoting the circulation of scientific images beyond the academic media, builds links between scientists and the general public in which scientific facts are proposed as a new way of understanding the sleeping subject and as the rational bases of a positive politics of sleep (Williams, 2017).

809 SEEING AS A WAY OF KNOWING: A LOOK FROM THE HISTORY AND THE HISTOLOGICAL WORK OF ABEL SALAZAR (1889-1946)

Maria Strecht Almeida (ICBAS, University of Porto)

In the life sciences, researchers frequently resort to images to provide evidence. The present paper reports a case-study, exploring the work developed in the early twentieth century by the histologist Abel L. Salazar to analyse the role of visual representations in the production of scientific knowledge. Medical doctor by training, professor, scientist and visual artist, Abel Salazar is deemed a multifaceted figure of the Portuguese cultural setting of his time. Present work is focused, specifically, on Salazar's research on the structure and function of the Golgi zone in mammalian cells. The observations of tissue slices treated by the so-called tannin-iron staining method enabled him to identify two areas in the Golgi zone, one of them highly tannophilic, which he conceived, observing at the resolution then possible, as a distinct organelle from the Golgi itself. Even if the interpretation was not proved correct these results disclosed part of the organelle structure as it became understood later. Building upon published texts (papers and textbooks), as well as archival sources, my analysis also takes into account the practices of sharing results as well as Salazar's reflections on the procedure of microscopic drawing as both tool in the recording of observations and as a help in observing. Staining and drawing are closely linked tools in his work, both present at the level of knowledge production. The epistemic role of drawing is clearly embodied in the case here explored and its relevance in the scientific practice will be discussed.

527 UPROOTED EXPECTATIONS: "SEEING" ENVIRONMENTS THROUGH DEEP LEARNING ALGORITHMS

Virginia Vargolskaia (University of Vienna)

The environmental crisis has many faces. The fate of soil-bound carbon that might be released into the atmosphere in the future is one of them, attracting the focus and the concern to the "dirt" under our feet. Through visualizations of the root lifecycle which is enabled by in-soil imaging techniques, plant roots are emerging as a key visual representation of soil-carbon relations. This processual understanding has also invited new ways of seeing roots, promising faster and more accurate analysis. Drawing on ethnographic material from an EU Marie-Curie international training network experiment based in Iceland, my study examines how novel ways of "seeing" are emerging at the interface of root science and computer vision, where artificial neural networks promise open software and faster image segmentation. These novel technological possibilities not only clash with existing epistemes of "seeing" stabilized within the root research community, but also reconfigure expectations towards machine analysis of images.

665 THE COLLECTIVE MAPPING OF EXOMARS 2022 LANDING SITE: SEEING, NEGOTIATING AND EXPERIENCING THE MARTIAN SURFACE.

Valentina Marcheselli (University of Trento)

The first photographic images of Mars, taken in 1964 by NASA's orbiter Mariner IV, were carefully stitched together to form a sort of irregular mosaic covering jagged stripes of the planetary surface. Even if blurred and irregular, these first images returned an idea of Mars that could be considered, at the very least, disappointing: both professionals and enthusiasts agreed that the Martian surface looked nothing but an empty land. After more than half a century, scientists see Mars as a rather attractive object of study: what was once a dull desert, appears today rich in geological features. But how do scientists and engineers identify features of the Martian landscape? And how do they agree (or debate) on what comes to count as an interesting feature worth being investigated?
Drawing on the author's ethnographic experience, this presentation explores the collective exercise of geological mapping organized as part of the scientific training and community building strategies deployed in preparation to the next ESA mission to the planet Mars: ExoMars 2022. This mapping exercise marked an interesting shift in how geologists, planetary scientists and engineers see Mars: if the landing area had been chosen because of its

safety, - made out of homogeneity, idleness and extreme predictability - at this stage it (has to) become geologically interesting - i.e. heterogeneous, dynamic and somehow surprising. This presentation focuses on how mapping activities - rather than maps as finished and stable objects - produce a shared (but flexible and unstable) understanding of the region of interest. The ExoMars2022 community, through the digital elaboration and interpolation of the many kinds of visual data available, negotiate of how this visual experience of Mars relates to the embodied experience of the geology of Earth.

Room N112 - Panel 045 PRACTICES AND POLITICS OF DIGITALIZATION: WORK AND ORGANIZATION IN STS

Session 2

600 THE ACTION-NET OF DIGITALIZATION IN PUBLIC ADMINISTRATION: THE CASE OF THE BOLOGNA MUNICIPALITY

Fabio Maria Esposito (University Federico II of Naples)

In recent years the digitalization of public administration (PA) has witnessed a growing importance, as a political discourse, as an empirical phaenomenon and as an object of inquiry. Since early 2000's most of the literature about digitalization of PA organizations applies deterministic and techno-optimistic stances. Later, less deterministic approaches have been proposed, while only recently more critical and context aware perspectives are adopted (Plesner and Justesen, 2018)
Inspired by the STS literature about digital technologies, the aim of my ongoing research is to explore how digitalization empirically manifests in local PA organizations. By framing digitalization in the public sector as the construction of a boundary infrastructure that encompasses concepts/discourses, artifacts, and practices I intend to retrace the translations and detours these kinds of processes bring by. How does digitalization on diverse levels of government affect elements and processes involved in PA, such as policy planning and service delivery, workflows, organizational actants, interactions and structures?
To address these questions, I apply a qualitative methodology to focus on the municipality of Bologna, allegedly one of the most digital city administrations in Italy. Through different techniques, such as in-depth interviews, document analysis and a 'walkthrough' of different tools/interfaces, this paper explores how digitalization manifests in PA as an ongoing process built upon the organizational intertwine of technical and human relational dynamics into a coherent action-net. By following the courses of action, actors and actants revolving around digitalization in a local PA context I seek to explore how digitalization is translated into practice. On one hand this may lead to a better understanding of how digitalization is manifesting in the Italian public sector, on the other hand it may be a small contribution to the construction of a more situated and less value-driven literature about the organizational implications of digitalization (in PA).

518 FROM THE ASSEMBLY LINE TO THE DIS-ASSEMBLY LINE: COMPARING FACTORY'S WORK WITH THE MAINTENANCE WORK OF WEB CONTENT MODERATORS

LIA TIRABENI (University of Milano Bicocca)

Talking about Taylorism today evokes in each person an idea that is both negative and efficient, which designates repetitive, fragmented, and standardized work, where the lack of discretion is imposed as a necessary condition for intense and uniform productions. The symbol of Taylorism is the factory's assembly line, where a teeming mass of people assembles pieces after pieces, always the same way. Some have talked about today's world of work as form of neo-taylorism, somehow comparing the 'old' ways of working to those 'new' of today. However, in this contribution I would put into question that idea by comparing the work of factory workers on the assembly line with that of web content moderators. While the factory worker performs visible work on a visible assembly line, the moderator's work is invisible (Roberts, 2019), as is the line s/he works on: not the assembly line but, I suggest, a 'dis-assembly' line. Such as the 'old' line infrastructures work, so does the new, but in different ways. The assembly line allows workers to assemble pieces, the coordination is sequential, work is highly divided. In the dis-assembly line, instead, pieces of content are meticulously disassembled by the algorithm that feeds them to workers who, in turn, view them and then eliminate those 'critical' through a maintenance and 'care' work (Denis, Pontille 2017). Factory workers went alienated (Touraine, 1967) through the line, moderators went isolated (Gillespie 2018). There is no sequential interdependence of tasks, rather each moderator is an isolated 'node' in the line. These considerations will be discussed using data from a study conducted in an assembly line combined with secondary data from existing research on content moderators. I suggest that comparing such seemingly distant cases can illuminate hidden spaces of investigation and help imagining new convergences between STS and organizational studies.

771 ANALYZING THE POWER DYNAMICS AND MATERIALITY IN DIGITALIZATION PROJECTS IN EXISTING LOCAL CONTEXTS: EXPERIENCES FROM MANUFACTURING AND THE INSURANCE SECTOR

Johan Buchholz (European New School of Digital Studies, European University Viadrina, Frankfurt (Oder), Germany and Department of Science, Technology and Society, Technical University of Munich, Germany)

Digitalization projects in companies are often a reaction to debates, visions or technologies such as the "fourth industrial revolution" (4IR), the "future of work" or "artificial intelligence" and therefore come with high expectations

of both observers and participants. However, such visions remain surprisingly empty, as they serve only as an orientation for processes of translation into already established local contexts of the organization.

The translation of visions into organizational work contexts comes with power dynamics and challenges routinized patterns of action. In order to analyze the dynamics of digitalization projects, I refer to the strategic analysis of organizations and conceptualize the practices within them as a set of power games. As this approach approach is strong in explaining the sequence of action and the interplay of individual practices and local contexts, its focus on practices underrates the materiality of digital media and artifacts, as well as the performativity of non-human actors. For this reason, I extend the strategic analysis of organizations through the notion of organizational routines and introduce approaches such as performativity, the ostensive dimension of routines and the role of artifacts into the theoretical framework.

Drawing on an ethnographical approach and an extensive interview study in an industrial company in electrical engineering and a service work company in the insurance sector, my contribution aims at combining the strengths of the strategic analysis of organizations in analyzing power relations, and organizational routines as a way to describe narrative networks including the materiality of artifacts. This approach deepens the understanding of the politics and power dynamics of digitalization projects as attempts to translate blurry visions into existing local (work) contexts. My analysis shows when and how visions and practices differ and analyzes the attempts of actors to deal with the resulting tensions.

898 BRINGING TELEMEDICINE TO INTENSIVE CARE: RESPONSIBLE IMPLEMENTATION AND IMPLEMENTATION OF RESPONSIBILITIES

Ulrike Felt (Department of Science and Technology Studies, University of Vienna) mTimo Bühler (Department of Science and Technology Studies, University of Vienna) Carsten Horn (Department of Science and Technology Studies, University of Vienna) Michaela Scheriau (Department of Science and Technology Studies, University of Vienna)

By now digitization processes have entered both work and private environments leading to a reassemblage of the many human and non-human entities that make up our more or less stabilized sociotechnical environments. This is particularly true for medical environments, where data, their constant availability, processing and translation have gained importance.
In this presentation, we will enter the space of Intensive Care Units (ICUs) – which have gained unprecedented prominence during the COVID-19 crisis – to better understand how newly introduced digital practices reconfigure processes of knowing and caring, spatial arrangements and responsibility relations. Our research is part of a larger EU funded research project (101016000) “ICU4Covid”, that aims to introduce telemedical and other data driven solutions to ICUs across Europe. Our role as STS scholars in this project is to facilitate the implementation process through a co-creation approach.
In drawing on observational and interview data gathered in ICUs in the different partner hospitals of the consortium, we want to specifically address how questions of responsibility need to be (re)addressed under “conditions of digitality” and how this impacts work relations and occupational identities. This has various dimensions: How are legal responsibilities distributed in case the assemblage breaks down with detrimental consequences for the patient? Who is imagined to be responsible for “making things work” (again) and to maintain the emerging assemblage? What organizational transformations and changes to existing routines become necessary as the telemedical system is implemented? Our comparative approach will allow us to trace differences in the emerging “geographies of responsibility” (Akrich 1992), also considering that hospitals have different experiences and socio-technical starting points when it comes to realizing this digital transformation.

413 THE STATE OF WORK AUTOMATION: INTERROGATING ANTICIPATED FUTURES AND METAPHORS OF ORGANISATIONAL CHANGE

Martin Berg (Malmö University)

In the Nordic countries, which are known for their expansive welfare systems, public administration is increasingly being viewed as a potential automation site. Data-driven process automation is believed to alleviate administrative drudgery and support a goal-driven, efficient public sector. In the implementation of automation systems, a variety of stakeholders participate, including corporate actors, managers, consultants, politicians and civil servants. As stakeholders, these groups have diverse perspectives and expectations regarding the anticipated future of automation and its role in the organization of public services. The idea of automated work processes is accepted by some as a way to boost efficiency, productivity, and precision through algorithmic data processing; others, however, see such systems as ways to let professionals spend less time on repetitive, rule-based, and seemingly tedious tasks so that they can focus on their core professional practice. This paper engages with the tensions between the different ways of imagining automatized futures by reporting from ethnographic research with stakeholders from roughly ten municipalities in Sweden, as well as digital technographic studies of two world-leading work automation platforms. Using the sociology of expectations as a theoretical framework to illuminate these tensions, this paper explores the role of anticipated automation when organizations imagine change. The

paper shows that automation can be used to help envision, think about, and communicate organizational change without involving any technology, but rather as a metaphor to which future-making practices can be attached and legitimized. Work automation is understood in the paper as fundamentally social and structured as well as affected by expectations regarding future benefits and potential risks. By explicitly paying attention to expectations and experiences, the paper allows for an interrogation of emerging automated work futures that goes beyond techno-optimism and economic-political goals of efficiency and optimisation, not the least by illustrating work automation's situated and contingent nature.

529 EXPLORING THE DEVELOPMENT AND IMPLEMENTATION OF A COLLABORATIVE ROBOT FOR AUTOMATED WIRING PROCESSES AND ITS EFFECTS ON INFORMAL WORKPLACE LEARNING

Michael Seidler (Institute for Social Science Research (ISF Munich) Norbert Huchler (Institute for Social Science Research (ISF Munich)

We would like to address the questions of how a collaborative robot – for wiring a control cabinet's assembly panel semi-automatically – is being designed in a laboratory and implemented in a factory. Accordingly, we have been accompanying a company for the last 15 months that has been developing a new collaborative robot to semi-automate a manual task: The process of wiring a control cabinet's assembly panel – lot size 1. The process is complex and the handling of flexible parts, e.g., cables and wires, is a technical challenge. Due to the complex task, a machine that could fully complete this task on its own successfully has not been developed yet.
In this case, we are interested in the following questions: How is the machine being developed (e.g., management's expectations, engineers' expectations, workers' expectations, regulations, third (Luhmann 1971; Lindemann 2006)? What are the actual implications of the machine in a real-world practice (factory)? What are the implications for the workers' learning and development opportunities in particular? How could an algorithm divide labor based on humans' and machines' skills?
The development and implementation of new technologies are continuously changing our work environment. We would like to build on the idea that work and learning need to become more intertwined and would like to think about what a human-robot collaboration and a factory that promote learning could look like in the future to provide informal workplace learning – in contrast to learning outside the workplace (Elsholz 2019). We use participatory and qualitative research methods, have conducted interviews with engineers, observed the collaborative robot in the laboratory, and are moving forward to observing it in real-work practice once it will be implemented at a production sight.

Room N110 - Panel 047 MAKING LIVEABLE WORLDS THROUGH REFLEXIVE METHODS: CARE AND INTERVENTION IN STS RESEARCH

Esther Dessewffy (Department of Science and Technology Studies, University of Vienna)
Bao-Chau Pham (Department of Science and Technology Studies, University of Vienna)
Andrea Schikowitz (Department of Science and Technology Studies, University of Vienna)
Fredy Alberto Mora Gàmez (Department of Science and Technology Studies, University of Vienna)
Sarah Davies (Department of Science and Technology Studies, University of Vienna)

Drawing on a long tradition of and commitment to reflexivity, situatedness, and positionality in STS research, this panel invites contributions that highlight the ambiguous relations of researchers to their research subjects, including self-referential methods and practices such as auto-ethnography.

The promise of reflexivity as a core STS virtue and methodological principle is both moral and epistemic – reflexive research is deemed to be more ethical and of higher analytical quality. In addition, feminist scholars who bring forward care ethics make an ontological argument: reflexivity enables us to contribute to worlds we perceive as desirable. Building on these assumptions, we ask what reflexivity (co-)produces in our research. How and to what extent can it make power relations more visible? How can reflexivity be translated into practice? How can it move beyond mere theoretical deliberations and commitments (Arias López et al. 2021)? Can reflexive techniques provoke consciousness about how we work together as (heterogeneous) research teams, and inspire us to create alternative spaces?

We ask how ethical, epistemic, and ontological promises of reflexivity can be mobilised in research practice, and how we can create caring relations between researchers and research 'subjects' and 'objects'. Considering our research as performative not only of the phenomena we investigate but also of our researcher identities, we are also interested in how reflexivity transforms the subjectivities of researchers. Ultimately, we are concerned with the question: what kind of methods, techniques, and tools can be mobilised to faithfully 'make and do' reflexivity in research?

For this panel we invite discussion about how we can create more liveable spaces, in research and beyond, with reflexive methods. We want to initiate conversations about how the stories we tell with reflexive practices might 'perform themselves into the material world' (Law & Lin 2020), making our lived experiences visible, and allowing us to cultivate healthier relations. We are interested in engaging with scholars and scholarly work that has reflected on research practices and reflexivity as an area of research, whether that is autoethnography or other self-referential or self-positioning practices and techniques.

We welcome contributions at any stage from finished papers to work in progress, and from academics at all stages to participate in a more-than-methodological discussion. We are eager to use this panel to foster discourse on how reflexive methods and collective reflections on collaborative work reconfigure particular group constellations, and how they co-produce research practices and spaces. We particularly encourage contributions that experiment with form and presentation of their scholarly argumentation, as well as work that investigates the nexus of reflexive methods and care practices. We look forward to bringing a wealth of research topics and questions together to collectively reflect on how we enact spaces, research identities, and care with our academic practices.

Session 1

738 ETHNOGRAPHIC RESEARCH AND GAME DESIGN: ENGAGING MIGRANTS IN THE DESIGN OF MIGRATION INFRASTRUCTURES

Lorenzo Olivieri (University of Bologna)

This contribution aims to reflect upon the design of an intervention I developed during my PhD project. The intervention had a double objective. First, it aimed to work as a device through which eliciting migrants' memories and experience with the data infrastructures for migration management. Second, drawing on participatory design, design justice and STS making and doing, it sought to involve migrants in the design of the administrative procedures to which they are subjected during their migration journey.
To achieve these goals, I designed a role-playing game trying to reproduce some of the knowledge asymmetries and power relations shaping migration control. Players were given a narrative identity card describing the migration trajectories of one or more persons and then, according to the information contained in the cards, they had to fill in a form very similar to the application for international protection in Italy. During the game, players had the possibility to modify the form by adding or removing categories and attributes.
The intervention was conceived as an attempt to answer Kaurin's (2019) call to engage migrants in developing solutions to the problems and challenges they have to face. Moreover, if anthropology can be thought as a careful design practice aiming to envisioning and making new, possible futures (Criado 2021), then inviting asylum

seekers to re-design the standardized forms and categories used in migration management might represent a way to broaden the possibilities of action of future asylum seekers.
Yet, the developing of this intervention also opened up the field for a number of questions: to what extent game and game design can be used to do research in highly sensitive and dramatic contexts? How could the project be presented to participants and what they were expecting from it?

430 CARING FOR BIOSOCIAL COMPLEXITY. CARE AND REFLEXIVITY IN ETHNOGRAPHIC ENGAGEMENTS WITH BIOMEDICAL RESEARCHERS

Michael Penkler (University of Applied Sciences Wiener Neustadt)

In this paper, I reflect upon practices of reflexivity and caring that I have encountered in my ethnographic research in the biomedical field of Developmental Origins of Health and Disease (DOHaD). DOHaD provides a framework for understanding how environmental factors in early life shape individual and population health over the life course. DOHaD has been criticized for framing the environment in often reductionist ways and for being preoccupied with women's bodies and behaviors, thereby reproducing gendered stereotypes and contributing to an increased surveillance of mothers. I show how similar concerns are shared by many DOHaD researchers themselves. DOHaD researchers are often eager to capture what they regard as more 'complex' understandings, but are confronted with established methodological tools, disciplinary infrastructures and institutional contexts that favor simplistic articulations of the environment. I show how researchers struggle with these simplistic articulations, which are often at odds with the researchers' own normative commitments and aspirations. Then, in a next step, I reflect upon how this particular ethnographic story is the result of the ethnographer's own care practices. The research reported on here is part of an ongoing engagement with DOHaD researchers, in which we collaborate on how DOHaD can be made more socially responsible in ways that promote social justice and health equity. This ethnographic story, then, cannot purport to be a disinterested account, but is situated knowledge tied to personal, normative and epistemic commitments. Some of my informants have become my friends and I deeply care how DOHaD can be made more responsive towards including complex understandings of the environment in its research practices. This is a shared matter of concern between DOHaD researchers and the ethnographer that transforms the ethnographer, its research subjects, and the stories told.

981 SYNTHETIC BECOMING: ENGAGING THE INTERSECTION OF ART, ACTIVISM, AND FEMINIST TECHNOSCIENCE

Lenka Veselá (Faculty of Fine Arts, Brno University of Technology)

Drawing on Synthetic Becoming, a collective research project that I have initiated, I focus on ways of presenting and publishing research in Academia and examine how experimenting with innovative, hybrid formats or expanding the scope of existing ones can facilitate reflexivity in academic research.

Synthetic Becoming brings together research by artists, activists, and feminist technoscience practitioners concerned with life re-assembled by industrial, pharmaceutical, and more-than-human production and interplay of hormonally active molecules. With our collective, collaborative project, we seek to put forward critical but hopeful accounts of posthuman mutability and cyborg becoming with hormones and hormonally active chemicals that promote caring relations and allow us to envision and enact hopeful futures with and despite these peculiar chemical agents.

I start my contribution by emphasizing the importance of the intersection of artistic research and feminist technoscience for studying hidden, slow-moving, and emerging realities of becoming with chemicals and for developing alternative narratives about them. Then, I elaborate on hybrid formats — the research exhibition and the monograph-as-exhibition — that we use to accommodate our transdisciplinary experimentation with creative practices of knowledge and doing research otherwise. And finally, I point out why it is important for us to articulate our affective, poetic, and engaged interventions as research and why we think that speculative engagements looking for the different ways of knowing and being with chemicals should be taken seriously. I conclude by remarking how, by pushing for our publication to be recognized as a "collective scientific monograph", I sought to challenge academic gatekeeping of what counts as scientific research and, in so doing, managed to create a better funded institutional space for our engagements.

398 STS RESEARCH(ERS) IN THE PANDEMIC: AN AUTO-ETHNOGRAPHIC PINBOARD

Sarah Davies (University of Vienna) Esther Dessewffy (University of Vienna) Andrea Schikowitz (University of Vienna) Fredy Mora Gámez (University of Vienna) Bao-Chau Pham (University of Vienna)

What can the continuing pandemic situation, and the disruption and uncertainty it has entailed, teach us about the nature of contemporary academic work? In this paper we reflect on this question, drawing on our practices and experiences as a group of STS researchers through an auto-ethnographic project. Carried out in 2021-22, this project sought to document and critically analyse our working practices under pandemic conditions. Our aim

is fourfold: first, we seek to present a record of one set of situated experiences of the pandemic; second, we offer methodological innovation through experimenting with a 'pin-board' (Law 2007) as a non-linear, multi-modal way to make academic arguments; third, we highlight some of the diverse ways that care within academia can be patterned and experienced; and fourth, we begin to open up some of the tools, practices, and rhythms through which STS knowledge is constructed, organised, and shared.

Our work therefore speaks to a number of areas and themes within STS scholarship, including research into the nature of contemporary academic labour; what it means to think with care; the nature of epistemic practice in STS, including the affordances of self-referential methods; and discussions of how research-based knowledge can and should be represented (for instance by 'making and doing'). In this presentation we will focus on the methodological aspects of our research by discussing, and mobilising, a 'pinboard' approach that allows for a logic of juxtaposition and multi-modality, rather than linearity. We use this to represent lived experiences of academic work in pandemic times with all their ambivalences and tensions, thus enabling a 'double-vision of care' (Lindén & Lydahl 2021).

900 ENACTING CARE THROUGH METHODOGRAPHY

Julie Sascia Mewes (Ruhr University Bochum) Ingmar Lippert (Chair of Technoscience Studies/Brandenburg University of Technology)

In this paper, we explore the potential of enacting care through methodography, an emerging genre of writing about reflexive methods, specifically within and about STS ethnography. We think of methodography as a genre shaped by scholars who reflexively attend to their own or other social scientists' research practices (Ashmore 1989; Greiffenhagen et al. 2011).

Our question is how methodography might extend STS notions of care and intimate entanglements towards more care-ful ethnographic methodologies and practice (Lippert & Mewes, 2021; Mewes & Lippert, in preparation; Law & Lin, 2020; Latimer & López Gómez, 2019; Mol, Moser & Pols, 2010).

In this paper, we draw on our own ethnographic research practice on occupational therapy and heritage infrastructure in Germany. We conduct a methodographic analysis of this material and then show how this methodographic approach enacts specific realities of care.

We conclude in terms of how methodographic analysis can enact "care-ful research" (Law & Lin, 2020). We argue that being care-ful methodographically extends the "sensitivity to the performativity of research" (2020:1) from method's reality effects to the infrastructure of performing method practice, and to caring for our ethnographic data, and its analytics and textual representations.

The paper contributes to the panel's and broader STS' aim to turn reflexivity into method(ographic) practice by offering a meta-analysis of how STS authors have enacted care through and for their research infrastructure, including researchers themselves, research agendas, questions, data and methods. Through this, enacting care through methodography is meant to set the ground to enhance future analytic and collaborative relation-making.

Room N102 - Panel 051 METHODOLOGICAL EXPERIMENTS IN STS: EXPLORING DIGITAL AND (QUALI-)QUANTITATIVE METHODS

Judit Varga (Centre for Science and Technology Studies (CWTS), Leiden University)
Maximilian Fochler (Department of Science and Technology Studies, University of Vienna)
Sarah Rose Bieszczad (Centre for Science and Technology Studies (CWTS), Leiden University)
Ismael Rafols (Centre for Science and Technology Studies (CWTS), Leiden University)
Sarah de Rijcke (Centre for Science and Technology Studies (CWTS), Leiden University)

Digital data, digital platforms and computational methods saturate knowledge practices that inform or constitute the imaginaries and infrastructures of our future. Examples include diversifying data about scientific practices (including scientometric, altmetric and webometric traces); online traces of collective discussions and commercial practices; and a growing range of digital platforms that coordinate environmental and socio-economic data, such as ongoing efforts by the European Union to create a digital twin of the ocean. Engaging with digital and computational ways of knowing is crucial for STS to study or intervene in them.

This panel invites contributions that attempt or reflect on methodological experimentation and innovation in STS by combining STS concepts or qualitative, interpretative methods with digital, quantitative and computational methods, such as quali-quantitative research. Over the past decade, STS scholars have increasingly benefited from digital methods, drawing on new media studies and design disciplines, among others. In addition, recently scholars also called for creating new dialogues between STS and QSS, which have increasingly grown apart since the 1980s. Although the delineation of STS methods from neighbouring fields may be arbitrary, delineation can help articulate methodological differences, which in turn can help innovate and experiment with STS methods at the borders with other disciplines.

We invite contributions that engage with the following questions. What do we learn if we try to develop digital and computational STS research methods by articulating and bridging disciplinary divisions? In what instances is it helpful to draw boundaries between STS and digital and computational methods, for whom and why? On the contrary, how can STS benefit from not drawing such boundaries? How can we innovate STS methods to help trace hybrid and diverse actors, relations, and practices, using digital and computational methods? How can methodological innovation and experimentation with digital and computational methods help reach STS aspirations, or how might it hinder or alter them? What challenges do we face when we seek to innovate and experiment with digital and computational methods in STS? In what ways are such methodological reflection and innovation in STS relevant at a time of socio-ecological crises?

Session 1

838 RESEARCHERS, DIGITAL TOOLS AND POLITICS OF METHOD. AN ACCOUNT OF THE RELATIONSHIP FROM EXPERIMENTS WITH DIGITAL CONTROVERSY MAPPING.

Chiara Poletti (University of Warwick)

Computational and digital methods are a critical resource for STS and controversy mapping. Far from being ‘unproblematic’, the opportunities and limitations of their use have been the object of several scholarly discussions (Savage and Burrows, 2007; Marres, 2015, 2017; Rogers, 2013, 2017, Venturini and Munk, 2022). In this paper, I use empirical examples from my controversy mapping of online content regulation as an opportunity to contribute to these discussions.
I present the case of how search engines and computational linguistic tools, such as Latent Dirichlet Allocation (LDA), can be used in the context of controversy mapping and what challenges and opportunities I have found in my own study. In particular, I address two aspects: on the one hand, I discuss the relationship between the researcher and the digital tool and how the ‘hard craft of compiling datasets’ (Venturini and Munk, 2022:163) can inform discussion on the labour of research. On the other, I discuss digital methods in the context of larger politics of methods (Savage, 2010; Ruppert and Scheel, 2019), and how the use of digital tools for the collection and analysis of URLs and texts connect to larger debates on politics and biases embedded in technology (as for instance, the debates on material costs and social implication of datasets and large language models). I conclude by saying that digital tools, when used critically, have the potential to become a meeting point in which different disciplines can see themselves through the eyes of the other, fostering a specific research culture. The use of digital tools in social research and tools developed in interdisciplinary labs are an example, requiring a complex exercise of ‘translation’ and dialogue between researchers (and object of research) that has the potential to open the black box aspects of computational technology and social research as well.

944 SETTING UP SPECULATIVE DATA VISUALIZATIONS

Laura Kochsch (Aalborg University) Estrid Sørensen (Ruhr-Universität Bochum)

Recent ventures into digital methods assert that quantitative data can be combined with ethnographic sensitivities; using data not as device to simplify and draw causal conclusions, but to map controversies (Venturini & Munk 2022), engage with heterogeneous stakeholders (Jensen et al. 2020), valorise neglected perspectives (Zegura et al. 2018), or to identify new relevant questions (D'Ignazio & Klein 2020, Munk et al. 2019).

As these experiments show, digital methods contribute to the widening of STS' conceptual heuristics and may be capable of generating alternative models to think with (Serres 2013, Mol 2021). In line with that we trace 1. how visualisations enable modes of "speculation," and 2. how the settings of digital methods matter. Speculative modes of engagement entail "suspended judgment" (de la Bellacasa 2017, p. 155), facilitate moments of halting, troubling, contemplating, and slowing down (Stengers 2017) in order to fabulate and create alternative relations (Haraway 2016)

Computational Social Science seeks to generate truth about the social world that bring discussions to an end. Settings in which data visualisations do exactly the opposite evoke speculation. We present three settings in which we crafted moments of speculation with digital methods. In a classroom setting, students tinkered with digital visualizations and training their speculative gaze. In a fieldwork setting, a controversy became tangible through digital visualisation, opening questions of good interventions. In a workshop setting interdisciplinary participants discovered unexpected collaborations through a digital visualization.
We discuss how each setting unfolded speculative potential differently based on their material, relational and political arrangement, and point to how close attention is required to the situations in which digital methods are employed – not solely to the method itself.

933 CONSTRUCTING SIGNIFICANCE - EXPLORING LARGE NOMINAL DATA BETWEEN STS AND COMPUTATIONAL METHODS

Kahlert Peter, European Newschool of Digital Studies (European University Viadrina) Kahlert Suzette, European Newschool of Digital Studies (European University Viadrina)

Dealing with digital methods, big data, or AI is challenging socio-scientific methods and perspectives (cf. e.g. Wolbring 2020 or Kinder-Kurlanda 2020). Although researchers can scrape huge amounts of data on online platforms for instance, that data may still remain inconclusive, vague, or generic in terms of analysis.

Our talk discusses how we dealt with these problems as STS researchers in the case of DataSkop; a research project funded by Germany's Federal Ministry of Education and Research which is concerned with developing a data donation platform for research purposes. More precisely, we present methods and insights from our first pilot campaign researching the content curation and video recommendations on Google's video platform YouTube.
With this online, mass-media alike, research object, cultural significance may shift from preferring statistically pivotal data to including numerically marginalized sensitivities and subjective experiences (e.g. Mozilla's YouTube Regrets project). The data we collected (from over 5000 donors) included user data like experiments on video-recommendations, news curation, and search query results. However, the resulting pile of data is mostly comprised of nominal data which is distributed rather logarithmically: There are few items that can be found very often, and several ten-thousands 'low frequency' events. While the platforms curation might appear clean, looking at the content visible by frequency, issues and concerns can be dug up from rarer and thus hidden phenomena. Thus, we developed a mixed methods approach of condensing lists into qualitative comprehensibility, of reverse-(re)searching for sensible content, terms, and figures, as well as interfaces for data-exploration. Like the Panel's scope, we understand our methodology as a device that renders such datasets explorable and exploitable from an STS point of observation, contributing ontological criticism to the computational methods and perspective with which such research interacts.

934 HOW TO ENRICH THE MAP? A CASE STUDY OF MAPPING GERMAN PUBLIC SERVICE MEDIA LIBRARIES

Maryam Tatari (Technical University of Munich)

In this paper, we argue that devising a mixed research methodology to study digital platforms is beneficial to reveal actors, relations, and practices. The proliferating platformization and digital transformation require designing and deploying suitable research methods and approaches. Meanwhile, addressing the hybrid nature of actors, relations, and practices is gaining importance. Specific digital methodologies and tools act powerfully, mostly quantitively, in collecting data from social media and search engines - unfolding the public debate and controversy around them. However, less attention has been given to incorporating digital methods with the efforts taking place to study the digital platforms as infrastructures, from requirement collection to quality assurance and test. The complex system behind platform development needs abundant collected data and solid analytical approaches.

On the one hand, collecting a large pile of accounts and data only through qualitative methods can be time-consuming. On the other hand, digital analytical approaches cannot give an inclusive analysis. Now, the role of the researcher to put together a functioning mix of methods highlights more than ever.
Nevertheless, capitalizing on mixed-methodological practices to study the development of one of Germany's Public Service Media media libraries - the so-called ARD Audiothek and ARD Mediathek - and how public values are interwoven there requires mixed methodology. Furthermore, visualizing and mapping the results facilitate our understanding of the field. In this paper, we investigate our mapping approach as a case study. Accordingly, the case includes three vignettes of analyzing and mapping actors and issues elicited from semi-structured expert interviews, internal reports, documents, and online public debates. Since the vignettes originate in various data collection methods, they can unveil complementary and contradictory accounts. Eventually, integrating these maps would allow us to navigate and trace actors, relationships, and practices seamlessly.

Room N111 - Panel 052. CO-DESIGN AND KNOWING (IN) DIGITAL HEALTH TECHNOLOGIES WITH FUTURE USERS OF ALL AGES

Julie Sascia Mewes (Ruhr University Bochum)
Sebastian Merkel (Ruhr University Bochum)
Estrid Sørensen (Ruhr University Bochum)

This panel focuses on co-design in medical and healthcare innovation as a collective knowledge practice. It invites papers concerned with how the participatory development, design and use of mobile health apps and other novel digital health technologies re-structure the relationship between technology, citizens of all ages and their medical staff, their treatment experiences, and related ehealth literacies. We are particularly interested in research exploring ethical, social, and political implications of novel digital applications and how they co-shape daily (work) life and knowledge practices.

Co-design is often described as an inherently productive or successful collective endeavour. Panel contributions are asked to critically reflect upon potential exclusions and limits, frictions as well as troubles of co-design, its methods, and methodologies as well as the academic infrastructures it is embedded into. The main concern here is that participatory processes in design often target the expertise/life experience of potential users without a framework of what it consists of and which skills and health-related literacies are (to be) developed by whom during the project itself. What impact, if any, do co-design and (future) use have on ehealth literacy of all involved collaborators?

The panel creates a collaborative space for rethinking digital health technologies, their related collective knowledge-making practices and the power/weakness of participatory methods of co-design. We hope to thereby bring together STS researchers interested in issues of care, medical/health innovation, co-design (as an umbrella term for PD, UI, and other participatory design/innovation processes), and/or collaborative knowledge-making with citizens of all ages.

Session 1

149 POPULAR DATA. HOW PATIENTS AND DOCTORS DEAL WITH DIGITAL APPS AND DEVICES

Danny Lämmerhirt (Technical University Dortmund) Cornelius Schubert (Technical University Dortmund)

Increasing digitization in healthcare is one of the main future trends in many countries. Policy initiatives often push for more digitalization in different fields of healthcare, even more so since the pandemic. These developments suggest an expansion and popularization of a digital-biomedical cosmology (Jewson 1976, Saukko 2018) inscribed into apps, wearables, platforms, and the practices they purport. They also raise questions as to how the popularization of digital body data affects the way patients might cooperate with or contest doctors and their expertise when producing patient-generated data.

Our paper presents findings from a qualitative study with members of self-help groups and general practitioners in Germany. Combining work from medical sociology and STS, the talk discusses findings from semi-structured interviews about the interviewees' opinions, experiences, and use practices with digital health technologies. It connects these insights to an analysis of the affordances and embeddedness of health apps and their data points in wider healthcare infrastructures (Danholt and Langstrup 2012).

The paper argues that the role of patient-generated data in doctor-patient interactions can be fruitfully studied by attending to practices of translation (Broom 2005), accommodation, and resistance, and how these interact with the existence (or absence) of shared diagnoses or protocols (Timmermans and Berg 1997). We ask questions along the following lines: How should doctors assess the usefulness of apps and the data people gather with them (Fiske, Buyx, and Prainsack 2020)? How might patients understand their body and specific disease symptoms through data (Sharon and Zandbergen 2016)? How do patients and doctors appropriate or contest the data and the norms written into them, and if so, in what ways? Building on research on the impact of internet communication on doctor-patient interaction, we investigate if and how people's practices of generating health data through apps and wearables affect the doctor-patient relationship.

912 AI AT WORK: THE LIVING LAB METHOD TO EMPIRICALLY STUDY AI FOR INTENSIVE CARE TREATMENT

Justien Dingelstad (Erasmus University Rotterdam) Iris Wallenburg (Erasmus University Rotterdam) Claartje ter Hoeven (Erasmus University Rotterdam)

AI could drastically change work life and in some sectors might even replace human labor (Huang, Roland & Rust, 2018). Although AI builds on many technologies whose impact on organizational life has been studied widely (such as big data and algorithms), intelligent and hence learning technology differs in that once it has been

adopted and is in use, there is almost no possibility of changing its design and intent. Hence, the 'normal' empirical route of waiting until a technology is implemented before studying its genesis does not suffice; we need to study AI 'in action'. That is, if we don't want AI causing social problems such as unemployment and distorted work processes, we must study it in real life work settings and closely monitor the effects it produces there. However, this has rarely been done so far (Bailey & Barley, 2019).
This PhD research aims to fill this gap by empirically studying AI from its design to use in a Dutch hospital ICU setting where data scientists and engineers closely work together with doctors and nurses in co-creating human-centered AI. We follow decades of STS theory that shows that to study how technology impacts work, one must study its use in practice by employees in their organizational context (e.g. Barley, 1986; Latour, 1991), for instance in a living lab setting. This laboratory approach is rooted in STS (Knorr-Cetina, 1995), fits the 'practice lens' perspective (Orlikowski, 2000), and is considered very suitable for explorative social science research. However, living labs are not neutral practices (Rahmawan-Huizenga & Ivanona, forthcoming) and currently lack a common definition and robust methods (Dekker, Contreras & Meijer, 2020). Besides our theoretical contributions, we aim to provide more empirical insight into the creation and use of human-centered AI in highly delicate, high-pressure work settings such as the ICU.

913 DOING CO-CREATION. ARTICULATIONS OF EMPOWERMENT IN THE DEVELOPMENT OF A HEALTH DATA INFRASTRUCTURE

Susanne Oechsner (University of Vienna) Robin Rae (University of Vienna) Ekaterina Osipova (University of Vienna) Ulrike Felt (University of Vienna)

Digital health is an omnipresent notion in discussions of future health and healthcare. It requires the availability of digital health data for various actors in healthcare and research and its mobility between places of production, collection and use. The Horizon 2020 project Smart4Health (Grant No. 826117) promises to provide a missing link: the development of a health data infrastructure enabling citizens to collect all their structured and unstructured health and health-related data in one space. Once the data has been collected, citizens can freely share it with healthcare professionals or other persons they trust and also provide it for health research.

Smart4Health employs a citizen-centered co-creation approach, that is connected to the notion of empowerment – a crucial element of the benefit narrative of digital health. In our contribution we critically reflect on co-creation's potential for empowerment. Drawing on a broad set of empirical material (8 group discussions with citizens; 49 interviews with citizens, healthcare professionals and researchers) we discuss articulations of empowerment in how our participants made sense of the health data infrastructure and its development, their position in this infrastructure and their assumed role in its development.

We will outline several possible subject positions that not only differ in the degree to which they are compatible with the platform infrastructure but also require different forms of co-creative inclusion. Considering them as co-creative positions in their own right, we suggest the shifting of methodological attention also to frictions between (non-)users and technology. This approach takes seriously the position of no-longer and/or not-ever users, critically questioning the naturalization of digital health data infrastructures. Simultaneously, it allows for the identification of potentially disempowering and excluding relations early enough in the development process when they can still be taken care of instead of being delineated as irrelevant or out of scope.

888 REVIEWS FROM AND ABOUT OLDER PEOPLE ON M-HEALTH APPS: HOW DIGITALIZATION RESHAPE THE RELATIONSHIP BETWEEN OLDER PEOPLE AND HEALTH ISSUES?

Mengxi Zhang (University College London)

Emerging technologies and digitalization bring new opportunities and challenges to the ageing society, and meanwhile are being shaped by it. With possible health diminishes with age, older people may have higher demands on health technology than young people, which contradicts the earlier preconception that older adults are not skilled users of technology. It is found in the paper that digitalization and its implications might reconstruct the relationship between older people and health issues, starting from the adoption of health technologies on digital devices. They study samples ten reviews about older people from each of the top 200 health apps in Apple App Store (UK), and conducts coding and content analysis with them. As the result, the study identifies the specific impact of health apps on older people and their lives, older people's attitudes towards m-health apps, the experiences and key considerations in adopting m-health apps and various social factors associated with them. The paper argues that on the one hand, m-health apps can boost older people's health attention and motivate exercises, and on the other hand brings about concerns around dependence on technology and lack of humanistic care; older people's attitudes towards m-health apps are generally positive, with most concerns on practicality and less on safety. In addition, m-health apps are gradually shaping and shaped by the relationship between generations, different stakeholders (caregivers, physicians, technology companies, mobile platforms) and the social system. The study aims to understand the voices and knowledge about older people from the STS perspective, helps to explore inequalities in practice and social arrangements with health technologies in the

ageing society, and discuss the availability and effectiveness of older people's engagement in m-health technologies.

617 CO-DESIGNING SMART SPEAKERS FOR HEALTH AND SOCIAL CARE

Merkel Sebastian (Ruhr-University Bochum)

The presentation highlights first results of the project 'dexter', which aims at developing, testing, and bringing to market a so-called 'smart speaker' (such as Amazon's Echo) specifically designed for the health and social care sector. Applying a co-design approach, several workshops with (future) users, including patients, physicians, and nurses will be conducted and analyzed. The presentation will describe the methodology and discuss preliminary results. Firstly, it will provide an overview of the technology of smart speakers and present results of a literature analysis on potential use cases as well as theoretical reflections of the technology. Secondly, the current project will be briefly summarized with a focus on the methodology and first insights. A central focus is set on the reflection of co-design as a research approach and theoretical as well as practical challenges.

Room N115 - Panel 063 PARADOXES AND PUZZLES OF/IN CITIZEN SCIENCE

Session 2

962 CITIZEN DATA SCIENCE AND THE MAKING OF PUBLIC POLICY DURING THE COVID-19 PANDEMIC

Sine Zambach (Copenhagen Business School) Maja Horst (Technical University of Denmark) Alan Irwin (Copenhagen Business School)

During the current pandemic, there have been calls for ‘experts’ of different kinds to provide policy advice. In this context, we focus on the question whether Citizen Science is simply another source of technical evidence which fits within our current understanding of science-policy relations – or whether Citizen Science raises new issues, challenges and questions for public policy-making.
We will consider these general questions with particular reference to what will be termed ‘citizen data science’. Building upon one Danish example of the development of citizen data science with regard to the COVID pandemic, we will consider the implications for (citizen) science – policy relations.
In particular, we identify specific types of influence within the Danish policy process regarding the pandemic. These include, firstly, attempts to influence policy-making directly – for example, by pointing to errors in technical evidence or suggesting new data. Secondly, citizen data scientists have pushed for access to data with the result that key data sets have become publicly available in more accessible formats which do not demand deep understanding of API’s web-scraping and data cleaning. Thirdly, citizen data scientists see themselves as serving a key role in science communication, especially through the use of visualization and the increased availability of evidence. This final influence was additionally linked to the ‘debunking’ of inaccurate claims and the encouragement of new citizen data scientists.
While the role played by citizen data science has generally been praised by health authorities, there have also been criticisms: not least in terms of providing ‘misinformation‘. Finally, we offer some reflections on how citizen data science might be expanded to areas such as climate change and election data.

480 THERE IS NO SUCH THING AS TENSION - SOCIOLOGICAL REFLECTIONS ON DEALING WITH TENSIONS IN PARTICIPATORY RESEARCH

Altmann Kevin (BIDT München) Kitzing Michael (Johannes-Gutenberg Universität)

Research Subject
The relationship between science and the public has always been challenging, especially with regard to the extent to which public participation occurs in scientific research. The concept of Citizen Science, which emerged in the 1990s, takes up this challenge, especially against the current background of digitization. Citizen Science advertises with the promise to redesign the contract between science and the public in a future-oriented way and to improve it for both sides. While the commensurability of the opposing expectations is often doubted and a possible tension becomes the focus of attention, the current institutionalization processes of the field also reveal procedures that point to contradictory implications.

Thesis, theoretical framing and objective of the contribution
Against the background of these observations, we argue in our contribution that (a) with 'Citizen Science' inclusion is restricted on the epistemic level through limited participation in the research process, but (b) those restrictions remain latent in the communicative mediation practice towards the participants. Thus, inclusion in Citizen Science becomes something that both processes the multifaceted calls for democratization and participation and makes them manageable.
In order to derive this thesis, the contribution is oriented towards (a) recent systematization attempts of evaluation sociology (cf. Peetz 2021) and (b) Knorr-Cetina's (2008) proposal of a theoretical constructivism. These approaches suggest an understanding of Citizen Science as a phenomenon evaluated by scientific structuring principles, in which epistemic and social levels of reality collide and are communicatively mediated.

In this respect, the aim of the talk is to provide a sociological reflection on the technoscientific enabling and restricting conditions of Citizen Science. Through this, we analytically capture the agreement of the expectations of science and the public in the context of participatory research.

851 “TESTING” PROTOCOLS IN CITIZEN SCIENCE: SOCIETAL PROTOCOLS FOR PARTICIPATORY SENSING

Daniela van Geenen (University of Siegen, CRC Media of Cooperation) Emma Garnett (Kings College London) Christian Nold (The Open University) Danny Lämmerhirt (University of Siegen, CRC Transformations of the Popular)

In this presentation, we draw on our extensive engagements with the European citizen science (CS) “field” that is concerned with air quality monitoring to analyze existing organizational, scientific or methodological, and technical - often hardware and software - protocols, and identify their drawbacks. Our ethnographic work in this field includes surveys, interviews, participatory observations, and co-design experiences especially in the UK and Dutch context, of which we use empirical “snippets” to underscore our observations. The shortcomings identified based on this fieldwork include experts’ disregard of multiple (and competing) organizational and technical protocols that diverse scientific and non-scientific participants of a project might adhere to at the same time, and the lack of attention to and acknowledgement of a diversity of “sensing” and data practices within a same project. Moreover, all too often CS projects lack objectives for their long-term and sustainable existence, involving social infrastructures in which open knowledge transfer and exchange take place on a regular basis as a prerequisite for well-informed policy-making, in which multiple (expert and lay people) voices are taken into account. Departing from this analysis, we offer alternative conditions of possibility and evaluation criteria for CS projects. In this second step, we build on STS literature in the “sociology of testing” (Marres and Stark, 2020), a perspective that offers starting points to evaluate CS projects not just in light of an increase of testing situations in society in need of standardized principles, but tackles these projects’ societal roles “testing” and paying attention to their involved and required social relations and practices. The presented alternative societal protocols for “participatory sensing” address a) the recognition of differences in participants’ practices, b) the valuation of methodological multiplicity, c) the need of projects’ multi-scalar adaptability, and d) the relevance of translation work (e.g. in knowledge transfer and democratic decision-making).

Room N116 - Panel 071 AGING TECHNOFUTURES: FUTURING OLD AGE IN TECHNOLOGICAL SOCIETIES

Daniel López-Gómez (Universitat Oberta de Catalunya)
Helen Manchester (University of Bristol) Juliane Jarke (Bremen University)
Alexander Peine (Utrecht University)

The technoscientific capacity to make ageing futures knowable and actionable in the present is key in the governance of aging (Moreira 2016). In the midst of the crisis usually associated with aging societies, namely a 'care crisis', an 'environmental crisis' and a 'socio-economic and cultural crisis', technoscientific developments are usually placed both as the necessary responses for the prevention or mitigation of their harmful consequences and as a source of multiple uncertainties, risks and dangers also for the most aged (especially for disabled or racially or socio-economically minoritized older people).

At the intersection of STS and Age Studies (Peine, Marshall, Martin & Neven, 2021), this panel welcomes contributions that foreground and critically assess the aging futures that technoscientific developments materialise and that aim to explore ways for STS scholars to intervene in the making of these techno-futures. We know from STS literature that futures are made through expectations (Van Lente 2012), imaginaries (Jasanoff and Kim 2015), visions (Konrad et al 2017), and sometimes hypes (van Lente et al. 2013) that shape discourses about the future, define what is thinkable and drive investment, government policy and legislative frameworks. We also know that futures play an important role in technoscientific developments, both in biomedical research (Moreira, 2005)and technological innovation (Callon, 1989). Moreover, tracing which futures of aging are opened up and which are closed down (Stirling, 2008) or who or what is able to claim the future raises questions of social justice in aging future imaginaries (Urry, 2016). Aging technofutures are largely driven by powerful actors such as nation states, technology companies and technocratic elites (McCray, 2013) that determine how problems are framed and the kinds of 'solutions' that are imagined. But these 'big' technofutures also depend on 'little' futures (Michael, 2017) that happen in everyday lives of diverse groups of people who experience, perform and negotiate these futures from different socio-cultural positions.

In this panel, we welcome theoretical and/or empirical papers, or interactive, hands-on, or performative activities and workshops exploring questions such as:
- What aging futures are materialized in gero-technological developments and in the science of aging?
- How are these aging futures shaped and shape the problems and solutions usually associated with the challenge of aging: for instance, the transformation of the social and health care sector, the development of age-friendly environments or the inclusion of older people in the digital society?
- Whose aging futures are included or excluded in these developments? What normativities of good aging are enacted in these futures, and for whom these are good or bad futures?
- How might we imagine or (co)-design alternative aging futures?

Session 1

447 UNDISCIPLINING IMAGINARIES OF AGEING FUTURES: EXPLORING ACADEMICS' HOPES AND FEARS FOR THEIR AGEING FUTURES

Helen Manchester (University of Bristol) Matthew Lariviere (University of Bristol)

Ageing has become a focal point for major research investments across a range of disciplines. However, each discipline frames its own imaginary around 'ageing'. Medical and health researchers explore how to mitigate impacts of frailty and age-related illnesses. Engineers see ageing as an opportunity for technical innovation and transformation. Scholars from the arts, humanities and social sciences seek to make sense of ageing as an experience and combat age-related discrimination. There are, however, increasing calls for interdisciplinary working around present and future concerns such as pressures on social care, increasing health inequalities and questions of ageism.

This paper explores a process that set out to explore the imaginaries at work around ageing futures from the perspectives of scholars working across arts and humanities, social sciences, engineering, medicine, and health sciences.

As part of an initiative to open up new conversations about 'ageing' research across disciplines in our HE institution we worked with a writer to run two speculative fiction workshops. By using creative thinking, exploring assumptions, and using speculative design methods, we aimed to create a space for researchers to meet, explore and imagine dystopian and utopian ageing futures. We asked researchers to bring their disciplinary understandings of ageing to the workshops but also to engage with their own dreams, passions, and desires concerning the kind of later life they would like for themselves, their families and friends.

In this paper we explore how different disciplines foreground certain expectations or visions of the future, whether dystopian or utopian, how these visions are explained and what frames them. We will also report on how asking scholars to engage imaginatively and affectively in creating desired ageing futures might disrupt imaginaries and enable interdisciplinary conversation.

672 WHAT MATTERS TO ME - ENVISIONING THE AGEING FUTURE SELF AND ITS ENVIRONMENT

Catharina van Leersum (University of Twente) Kornelia Konrad (University of Twente) Johan van der Zwart (University of Twente)

The number of older people living independently at home is expanding. This brings often the need for more (technological) assistance or adjusting the environment, in particular the home itself. There is no shortage of more or less futuristic visions and concepts for adjusting homes to older age. However, futuring old age is largely done by others – developers of welfare technologies, public sector actors, or by family members and older people's personal networks. Ageing futures that are envisaged from 'outside' tend to be rather stereotyped, have blind spots, for instance with regard to diversity in gender, ethnicity or culture (Cozza et al. 2019), and in their generality can hardly cater for the personal and local circumstances and needs of individual persons or local communities. In one of the projects of Citizenlab, a Dutch regional initiative to experiment with forms of citizen science for health & wellbeing (https://www.topfitcitizenlab.nl/), we aim to explore more local and personal futures for age-friendly living in a neighbourhood jointly with older citizens. We have organized scenario-based workshops envisaging perspectives for healthy ageing and living in the neighbourhood, the local futures. Furthermore, we explore the usefulness of the tool 'what matters to me' for facilitating the reflection and discussion on future selves, personal needs, perspectives, and wishes for future living, the personal futures. This tool has been co-created with and evaluated by users in the context of long-term care (van Leersum et al. 2020; 2021). While generalized ageing futures proliferate, engaging with one's future ageing self can be emotionally uneasy and may be circumvented or postponed. Needs and priorities are not simply ready to be voiced or acted upon, but rather need to be formed, clarified, and explicated. In this talk we will discuss the results and reflect on implications for anticipatory practices more broadly.

965 "DOING THINGS TOGETHER": RETHINKING FUTURE TECHNO-CONNECTIVITY FOR LATER LIFE

Roser Beneito-Montagut (Cardiff University / UOC) Daniel López Gómez (UOC) Israel Rodríguez Giralt (UOC)

Past research about digital communication technologies to social connectedness has often focused on how language is done in encounters. This is also true for the social connectedness of older people. However, recently, it has become evident that using digital communication technologies can be organised around 'doing things together'. Many examples of these practices were reported as helpful to reduce people's feelings of isolation whilst at home during lockdown. People exercised, danced, played, cooked, etc., together via Zoom or other videoconferencing technologies but we don't know yet what these kinds of activities do for their social connectedness. Indeed, designers of digital technologies have been increasingly recognising the importance of designing and co-designing for shared activities (Brereton et al., 2015; Fuchsberger et al., 2021). As part of a research project conducted from September 2021 to December 2021, we conducted telephone interviews (N= 12) and surveys (N=255) with older people who were users of a social service -including a digital app- to strengthen the social connectivity and community resilience of its users. In this paper, we will explore empirically how these types of activities occur and what role these activities can play in supporting social connection. Alongside its focus on contextualizing technologies in the concrete everyday life situations in which they are experienced during imposed periods of isolation, the paper will attend to the relational and material dimensions of how these digital interactions are configured and sustained. Through this analysis, we propose to rethink digital connectednes moving away from an exclusively linguistic view of mediated communication to one organised around 'doing'. It will bring an under researched consideration that will add new understandings on how their connectedness has been theorised. It will inform future policy and design to mitigate social isolation with the support of technologies, especially for the most aged and disabled.

800 VISIONS AND REALIZATIONS OF CYBER-PHYSICAL SPACES IN JAPAN: SOLVING SOCIETAL ISSUES BY CYBERNETIC AVATARS

Celia Spoden (German Institute for Japanese Studies Tokyo)

In 2020 the Japanese Council for Science, Technology, and Innovation (CSTI) launched the "Moonshot Research and Development Program." As Moonshot Goal #1, they formulated the vision of a society "in which human beings can be free from limitations of body, brain, space, and time by 2050" (CaO 2020). The Program aims to develop solutions through high-risk and high-impact research for societal challenges such as the declining birth rate and

aging of society, particularly the resulting labor shortage (JST 2020). Elderly or physically impaired people and people with responsibilities such as caregiving and child-rearing should be able to participate in the labor market, regardless of physical, cognitive, spatial, or temporal limitations (MEXT 2020). To this end, so-called cybernetic avatars and a cloud-based infrastructure are to be developed, and social acceptance for this visionary society created.
The Moonshot Program's goals fit into the Japanese government's vision of playing a leading role in using information society technologies (society 4.0) to realize a super-smart society (society 5.0). In this future society, cyberspace and the physical world are to be integrated into a perfectly networked, highly efficient, and inclusive society (CSTI & CaO 2015).
The visions of the Japanese government and the objectives of the Moonshot Program may sound like science fiction, but they have already been realized to some extent and have become a social reality. In my presentation, I analyze the technoscientific futures imagined by the Japanese government and compare them to the visions of researchers funded under the Moonshot Program. Furthermore, I draw on the case of an Avatar-Robot Café where people who cannot leave their homes due to physical impairments work remotely as waitresses/waiters. Finally, I elaborate on how traditional and pop-cultural elements are interwoven into the process of materializing and realizing the visions of this café.

378 DE-SCRIPTING OF AGE IN CO-DESIGNING TECHNO-FUTURES WITH OLDER ADULTS

Katja Antonia Rießenberger (Eastern Switzerland University of Applied Sciences) Samira-Salomé Hüsler (Eastern Switzerland University of Applied Sciences) Lilo Ruther (Eastern Switzerland University of Applied Sciences) Bogdan Gherman (Technical University of Cluj-Napoca) Sabina Misoch (Eastern Switzerland University of Applied Sciences)

With (socio-)gerontechnologies slowly unfolding their potential scope, naïve techno-deterministic views of aging and technology are beginning to renew through the emergence of empirical studies of the design and use of technology by and for older people (Peine et al. 2021). Nonetheless, "age scripting" is widespread, where images of aging are inscribed unfiltered into new technologies during technology development and often remain unnoticed. Societally and personally held stereotypical views on aging can reach an ageist level and still end up getting implemented in technology design. These images then not only perpetuate the public image of old age but also beliefs that older adults incorporate about themselves (Wanka and Gallistl 2021, Joyce and Mamo 2006; Neven 2010, 2011; Vines et al., 2015; Peine and Neven 2020).
Co-designing with older adults aims to promote "de-scripting" of age in technology development and thereby minimizing the grey digital divide. Nonetheless, another challenge in co-designing gerontechnologies is when those are based on an interventionist logic, where technology developers and social scientists approach aging as a "target for interventions or as a set of problems to be solved" (Peine and Neven 2020). However, as long as co-designing practices are enhanced by critical awareness of ageist patterns in society and symbolism, its approaches can still be regarded as suitable methodology to de-script age.
Therefore, to foster "de-scripting", we have involved older adults in the development of our WisdomOfAge project (a platform for knowledge transfer between older people and companies) from the very beginning. To minimize the potential impact of an interventionist logic ourselves, we included questions on the project vision within the first co-creation workshop to potentially readjust the project development's strategy based on the participants' responses and we also plan to further integrate their remarks, thus enabling constant reflection of our practice of contributing to techno-futures.

Room N117 - Panel 092. COVID-19 AND PUBLIC HEALTH

Session 1

384 THE INTEROPERABILITY RENEGADE: FRANCE'S PERSPECTIVE OVER COVID-19 DIGITAL CONTACT TRACING VERSUS THE EU ONE

Dario Pizzul (Università degli Studi di Milano - Bicocca) Michele Veneziano (University of Bologna)

Digital Contact Tracing (DCT) has been one of the many non-pharmaceutical interventions employed since the early phase of the COVID-19 pandemic in Europe. This kind of technology relies on smartphones' Bluetooth for measuring distance and time of exposure between people to have a more efficient, scalable, and quick tool for tracing contacts, a pivotal task in the fight against a pandemic.
After numerous debates between scholars, institutional players, and firms, two different approaches developed in Europe: a centralized and a decentralized one. European institutions decided to promote a common decentralized approach, mainly relying on the technical solution proposed by Apple and Google (GAEN framework), which offered easier and quicker chances of interoperability. Progressively, most European countries converged towards this approach, with the relevant exception of France. Despite being a country that on many other occasions pushed towards a more united Europe, also from the digital and technical point of view, with respect to DCT France decided to act independently, adopting a centralized approach.
Widely relying on the STS tradition, this contribution aims at understanding what kind of interpretative differences emerge between the way France and the EU framed DCT. To do so, we performed a content analysis of official documents on DCT released by both France and the EU, identifying recurrent themes and investigating how they framed DCT and the GAEN framework. We also considered additional relevant materials such as statements by institutional actors and FAQs answers on official websites.
Our contribution also considers whether France's interpretation and framing of both DCT and the GAEN framework could have played a role in its decision to not opt-in the decentralized approach, which ultimately excluded the country from DCT interoperability with most of Europe.

770 ACTOR WITHOUT NETWORK DURING THE PANDEMIC. CONTACT TRACING APPS BETWEEN MISALIGNMENTS AND FAILURES: THE ITALIAN CASE OF IMMUNI

Letizia Zampino (Sapienza, University of Rome) Assunta Viteritti (Sapienza, University of Rome)

Since the outbreak of the pandemic, the datafication of contacts was proposed as the option for a return to normality. In a time of emergency, experts and scientists have denounced the possible use of self-tracking technologies, which are able to collect and record bodily information to improve physical and mental well-being (Lupton 2020), even as a tool to surveil the personal contacts in order to track the chain of contagions (Kitchin 2020; Tang 2020). A whole range of technical solutions have been adopted to develop tracing apps with the only function of notifying exposure to people encountered and tested positive, while following several recommendations to protect citizens' privacy. These recommendations aim to avoid the development of contact tracing apps as a device of surveillance and control, fears fueled by the experiences of China, South Korea, and Israel, where contact tracing apps have been imposed on citizens in a regime based on systematic data-surveillance (Gan and Culver 2020).
The paper proposes the analysis of Immuni: the contact tracing app developed by the Italian government. It is a case study that deserves interest from the point of view of Actor Network Theory (ANT) as an example of failure that makes visible the infrastructure of care. Accordingly, we shall ask: how does an established network (like the Italian National Health Service pre-pandemic) embrace new data-driven practises that should introduce new ways of managing health and care systems in democratic countries?
The contribution uses ANT as a method to reconstruct and map the history of the app as a technical object through the description of the app script, and the analysis of the main Italian newspapers and government sponsored advertising campaigns. A final reflection will discuss the rearrangement processes of the device, and the dilemma between datafication and democratisation during and after the pandemic.

397 DIGITALIZING THE PANDEMIC WELFARE: THE ROLE OF ICTS IN THE MANAGEMENT OF THE CRISIS AMONG VULNERABLE GROUPS

Roberto Cibin (Institute of Sociology of the Czech Academy of Sciences) Vanda Maufras Černohorská (Institute of Sociology of the Czech Academy of Sciences)

As a response to the recent pandemic and the restrictions on movement and closures of offices and activities, many public institutions in Europe have designed policies that increased the use of ICTs with the public to provide or collect information, offer support, and perform educational and work activities. Especially during the lockdown phases, for instance, many public governments' socio-economic support services could be requested only through e-government tools, and educational activities moved fully online. This process is in line with a mainstream vision of a “technological future” of people's lives that should become increasingly “smart” and

enhanced through digital innovation. Therefore, the pandemic, with its related acceleration of this technological turn, represents an unprecedented point of observation for STS research on ICTs. It allows us to better understand both the influence that the use of these technologies can bring in supporting policies of welfare, and the dynamics of inclusion and exclusion of heterogeneous actors in the different socio-technical infrastructures involved. Building on this, we discuss how policies designed to manage the COVID-19 socio-economic crisis relied on ICTs and how these responses highlighted frictions and power dynamics concerning women and people belonging to vulnerable groups. We also look at how civil society actors relied on ICTs to mitigate inequalities due to the pandemic. We offer a systematic overview of the dynamics of involvement and exclusion that are (re)produced through an incrementation of the presence of ICTs in the implementation of welfare policies. We aim to propose a situated, participatory and intersectional approach to the management of these dynamics. This analysis is based on qualitative data contained in reports written by researchers representing 31 European countries in the frame of RESISTIRÉ, an EU project aimed at understanding how COVID-19 related public policies, and initiatives from civil society organizations, shaped social inequalities.

Friday, 8th July

9:00-10:30

Room N101 - Panel 009. FERMENTATION FUTURES: MULTIPLICITIES, MICROBIOMES, MAKING

Maya Hey (Colorado State University)
Salla Sariola (University of Helsinki)

Fermentation, microbes and microbiomes. At first glance, it would seem that these three domains arrange themselves in a linear manner—that we use microbes in fermented produce to secure a healthy gut. In this frequently and publicly repeated framing, microbes are a lively and technoscientific prosthesis, such that the doings of fermentation aim to optimise the endgame of human thriving. By focusing on the outcome, ferments become literal elixirs to restore off-kilter gut microbiomes and, with it, the responsibilization of the individual reinforces a healthist approach to fermentation (as in the sentiment, “eat this, not that, because it’s good for your microbiome”).

Instead of a narrow focus of optimisation, this panel puts fermentation practices, the gerunds, the making, as the analytical focal point. Focusing on practices with microbes during fermentation processes brings attention to the multiplicity of microbes (not their singularity) and renders our relationships to them contingent (not causal). Whether or not we are aware of their presence, microbes are unruly and mobile, mingling and traveling across multiple microbiomes in ways that continue to surprise us. Consider, for example, how there is a stronger correlation between the hand microbiomes of bakers and the microbial communities of their own sourdough starters than there is between different sourdough starters. This suggests that microbiomes are always plural, often overlapping, and perpetually on the move.

While the gut microbiome receives considerable recognition, bodies are in and enhabit various other microbial worlds, animating biomes including the skin microbiomes, vaginal microbiomes, oro-nasal microbiomes, the microbiomes of other species, and the microbiomes of soils, waters, and landscapes. Instead of referring to “the microbiome” as a placeless consortia of microbes, this panel focuses on the specificity of how certain microbiomes come to be through fermentation—with naming and defining to be themselves political acts. Along with the democratization/revalorization of fermentation knowledge, the rapid increase in scientific knowledge about microbiomes ushers in analytical questions pertaining to what microbes are, and what apparatuses (physical and conceptual) we can use to make sense of microbiomes in-the-making via fermentation.

How and in what configurations do the practices of fermentation and microb(iom)es come together? How might we think about the relationship between microbiomes and fermentation, as well as their co-implicated futures? What heuristics (e.g. nesting dolls, fractals, weaving into each other) might be useful in thinking about the processual transformations that fermentation and microbiomes co-create? These questions shift the thinking of human-microbe relations from instrumentalization towards response-ability, becoming-with, and withnessing.

This panel invites presentations that critically and creatively examine the practices that connect microbiomes and fermentation. Focusing on the gerunds—the active doings—asks us to keep the socialities of humans, microbes, and environment in motion. Whereas optimization rhetoric tends to rely on static snapshots of causality (if this, then that), gerunds like chopping, kneading, bubbling, as well as designing, attuning, repurposing force us to pay attention to processes instead of outcomes.

Session 1

570 HARNESSING MICROBIAL FERMENTATION IN REPRODUCTIVE VENTURE TECH

Megan Tracy (James Madison University) Rebecca Howes-Mischel (James Madison University)

Tracing the recent shift from conceptualizing the human microbiome in terms of taxonomic counts to one focused on therapeutics involving the manipulation of microbial interactivity, this paper examines the proliferation of projects “making with” human-derived microbes. We consider the translation of the dynamic effects of vaginal and breast microbes into capitalizable projects extending from the production of “humanized milk” to vaginal microbial transplants. Centering microbial interplay leads us to query what fermentation is for within the greater human microbiome, a question amplified by a rapidly accelerating technological landscape. If fermentation has been conventionally understood as the breaking down of substances through microbial dynamism, then what do we make of projects aimed at harnessing the generative effects of microbes’ replicating, reproducing, responding potential? In attempting to create human reproductive analogues, venture tech projects manipulate microbial consortia, targeting liveliness not simply presence. This shift toward dynamism paradoxically leads toward greater attention to place—be it embodied or heritage (as in the case of initiatives to replicate Mongolian women’s breastmilk)—while at the same relying on technologies that detach and disembody. We analyze how these

projects rely on the gerunding of the human microbiome and a distinct placedness critical to microbial potential in the service of their own gerunds of disrupting, leveraging and bespoking. Yet, despite their hype these projects remain very much emplaced with attachments to gender, population, bodies. How do the heuristics of fermentation help us identify tensions of abstraction and placedness at the heart of microbial exploitation aimed at replicating gendered bodies and reproductive labor?

320 FERMENTING THE TEA: BIO-DESIGN COLLABORATIONS BETWEEN THE HOME, LAB AND STUDIO

Kaajal Modi (The Hub for Biotechnology in the Built Environment, Newcastle University) Karolina Bloch (The Hub for Biotechnology in the Built Environment, Newcastle University) Ruth Morrow(The Hub for Biotechnology in the Built Environment, Newcastle University) Mahab Aljannat (The Hub for Biotechnology in the Built Environment, Newcastle University)

The Hub for Biotechnology in the Built Environment (HBBE) is a unique collaboration bringing together bio-scientists from Northumbria University and architects, designers and engineers from Newcastle University to make 'Living Buildings' which are life-sustaining and sustained by life. These buildings are intended to be responsive to their natural environment; grown using living engineered materials to reduce inefficient industrial construction processes; and able to metabolise their own waste, reduce pollution, generate energy and high-value products and modulate their microbiome to benefit human health.

This paper is an account of a HBBE project that has been culturing and prototyping Microbial Cellulose (MC) on campus at Newcastle University, in order to investigate its viability as a building cladding material. MC is most commonly known as 'the mushroom' that grows on top of 'kombucha', a fermented vinegary drink that is purported to have benefits for the gut microbiome. The first prototypes have been grown and installed in the OME, an experimental building on campus at Newcastle University that is intended as a space where prototypes can be tested in an external environment and viewed by the public, whilst considering the interaction of the building with its environment.

The project is a design-led collaboration between two architects, a design researcher and a molecular microbiologist, as well as the bacteria and yeasts with whom we are working to grow the materials. The project explores whether culturing by MC in situ, we can grow a building material from finite resources (sugar, tea, starter), that will respond to its environment, sequestering carbon and contributing to net global biodiversity. In this paper we explore how the unruly, lively and contingent cultures of microbes and humans in the lab, kitchen and design workshop interact in novel, and sometimes frustrating ways, in order to generate their own affordances and explorations.

987 MICROBES IN THE MAKING: FERMENTATION IN ASSAM, NORTHEAST OF INDIA

Salla Sariola (University of Helsinki)

In the absence of scientific tools to study microbes, fermentation poses social scientists an opportunity to analyse microbes. The tangible metabolic changes taking place during fermentation – alterations in the smell, taste and structure of the products - provides a window to ask questions how fermenters understand what happens in this process.
Developing a practice-based and holistic theory of metabolism and microbes as an alternative to a microbiological explanation, this paper follows rice beer makers among indigenous groups in Assam, India, close to the border with Myanmar.

Fermentation practitioners' lay theories of microbes are not merely microbiological but present cultural analysis situated in the political climate of increasing populism in India, as well as the Earthly destruction sometimes named the Anthropocene. The presentation describes a lay theory of metabolism and microbes presented by the fermenters that connects metabolic changes with critiques of capitalism following ecological extraction, political oppression, and industrial health care and food production, together with human-environmental relations and spirituality. Importantly, the theory about metabolism and microbes is not an epistemic one but processual, a theory of making.

821 INTUITIVE AGRICULTURE: CONTENDING WITH MICROBIAL UNRULINESS IN THE FIELD

Marie Turner (Colorado State University)

Consuming fermented foods and microbial communities therein can assume “health” works in controlled, unidirectional, and mechanistic ways. The same assumption is often true in conventional agriculture where greater chemical inputs are presumed to correlate with better “yield” outputs (one very debatable way of measuring agroecosystem “health”). In unconventional practices of agriculture (e.g., cannabis, regenerative, and organic sectors) microbial ferments (e.g., compost tea, microbial spores, cultures with ferments, or targeted consortia) have become immensely popular because they represent non-synthetic or quasi-natural ways to achieve nutritional goals and pathogen control. In these sectors, products may achieve benefits through metabolic talents, symbioses, diversity, complex population structures, and context-adaptive behaviors of microbes, all of which are often difficult to parse mechanistically. (Say many growers: I don’t know how they work, they just do). Microbial unruliness has made conventional agriculture less willing to tolerate unspecifiable mechanisms of multispecies microbial products because they often defy regulation. However, over time and through immersion in capitalist architectures, even “organic” agriculture has increasingly relied on less intuitive more mechanistic practices. This study-in-progress—via interviews with scientists, growers, fermenters, entrepreneurs, marketers, and regulators in the microbial products sector of agriculture—seeks an understanding of how microbial consortia and their elixirs have been moved to the fringe. In the same way probiotics and healthist fermentation practices “farm” the human gut to certify “health” and ignore the privilege of doing so, reductionist expectations of microbial mechanisms change complex agricultural ferments into rule-following, acontextual probiotics that certify an organic market niche and therefore morally upright origins of food for the privileged. Rather than intuitive, collaborative, multispecies engagements with crops and the communities from which they are assembled, the current enactment of agricultural microbiomes flirts with monospecies precarity.

Room N106 - Panel 011. INFRASTRUCTURED TIMESCAPES OF THE ANTHROPOCENE AND CLIMATE CHANGE

Claudio Coletta (University of Bologna)
Asher Boersma (University of Konstanz)
Olivier Chanton (IRSN)

Time and temporality are inherently part of the concepts of “crisis”, “risk”, and “transition”. Amid the “great acceleration” and the scenarios outlined by IPCC reports, the precarious agreement of the COP meetings, the pressing demands for climate justice and the phasing-out of fossil fuels, temporal aspects are taking on new relevance for STS.

As Bensaude-Vincent (2021) pointed out, the actual debate on the Anthropocene still emphasizes the ‘Anthropos’ and the human exceptionalism over the ‘Kainos’ (epoch) and its time multiplicity. The panel seeks to address this asymmetry by exploring the heterogeneous, co-existing, clashing, uneven, and materially organized temporalities of the Anthropocene and Climate Change. The aim being to unfold their timescapes (Adam 1998), their polychronic and more-than-human existence, where modern linear time is but one account among many others.

First, the timescape of the Anthropocene and the one of Climate Change seem to bring specific ‘time-frames of reference’ conducive to different forms of political engagement (Nordblad 2021). Moreover, such timescapes are infrastructured, with infrastructures becoming key sites for time production, allowing or hindering navigation across the past, present and future at varying paces and tempo. Finally, since the Anthropocene and Climate Change are temporally infrastructured, they undergo time leaks, delays and accelerations as well as interferences that require new forms of care to be monitored, managed, maintained, governed, understood.

The panel invites to discuss the infrastructured timescapes of the Anthropocene and Climate Change as shaped by different means of time production, including technoscientific knowledge, climate governance, political actions and movements, (digital) infrastructures, as well as maintenance & repair and care practices.

We welcome theoretical, empirical and methodological contributions on topics including (but not limited to) the following:
- The technoscientific work to define the Earth’s time horizons; the making of the “ends of the world” (Danowski and Viveiros de Castro 2017); the emerging approaches to deal with risk in critical infrastructure settings, such as the regulatory regimes based on hybrid temporalities adopted in the nuclear energy sector ; the “deep-time reckoning” practices (Ialenti 2020) in geoengineering processes (e.g. nuclear waste management, GHG capture, etc.).
- The rhythms and timelines set by climate governance at transnational, national and urban scales, translated across situated variations and interests; the frictions between near-time actions and long-term planning; the momentum and the urgency enacted by climate movements to update the agenda with radical temporalities and hopes.
- Temporalities of more-than-human ecological reparation (Papadopoulos et al. 2022), including futures best served by human inaction, drawing on “the mastery of non-mastery” (Taussig 2020) - where at times not intervention (e.g. planting trees), but restraint and patience may be the best route to regeneration. Or decolonized forms of care, such as indigenous landscape and ecosystem cultivation through burning.
- The increasingly experimental nature of transitions to climate-neutral futures; The temporalities of digital infrastructures; the socio-technical interactions between the big data assemblages for real-time management and the futures produced by the “vast machine” (Edwards 2013) that allows projecting human and environmental conditions in the next decades and centuries.

Session 1

210 CLIMATE POLITICS AND THE GOVERNANCE OF TIME: THE HETERO-TEMPORALITY OF TECHNOLOGIES IN CLIMATE MITIGATION, ADAPTATION, AND LITIGATION

Huub Dijstelbloem (UvA)

The time dimension of climate change and of the development of technologies in climate change mitigation, adaptation and litigation has received relatively little attention in the study of science and technology and international relations. Climate politics relates to various regimes of time: geological epochs, the long-term consequences of the use of fossil fuels, investment cycles, technology development trajectories, the length of regulatory procedures, the periods over which elected governments have executive power, tipping points and points of no-return, subjective time perceptions, and even apocalyptic and eschatological visions of the end of

times. There is a dynamic interplay between these time horizons and their respective cycles, rhythms and tempi. Distinguishing temporal periods is therefore not enough: they interfere with each other and are constantly in motion. This paper investigates how different regimes of time problematize the coming-into-being of collective climate agreements and long-term collaborations; and how different institutions and technologies 'mediate' time regimes and connect and disconnect them. It argues that climate politics enrolls different types of longer terms that require policy-acting with various temporalities. Political decision-making, scientific research, technology development and investment cycles have different temporal courses, in which accelerations and delays, path dependencies, lock-ins, feedbacks and tipping points occur. The paper analyzes examples of the time-mediating role of different technologies in the areas of climate change mitigation, adaptation and litigation and explores (1) the time trajectories of new technologies for climate change mitigation, (2) the relation between past, present and future in climate change adaptation pathways, and (3) the acceleration of legislation by climate change litigation and data infrastructures. Hetero-temporality has significant consequences for conceptualizing climate security, as a novel technological climate politics emerges that has to relate to new regime changes, namely changes in different regimes of time.

251 NEGOTIATIONS OF GOODNESS IN NORWAY'S OIL CAPITAL – GENERATIONAL DYNAMICS OF LIVING WELL IN POST-PETROLEUM FUTURES

Anne-Sofie Lautrup Sørensen (IT University of Copenhagen)

Across disciplines concerned scholars and activists alike call for new modes of living well in a warming world. Taking such calls seriously require new understandings of what it means to be and do good. In this paper I explore negotiations of goodness in Norway's oil capital Stavanger, where oil plays a significant role in the narrative of Norwegian progress and demands to phase out the production challenges deep-seated cultural ideas about Norwegian goodness (Tvedt 2006; Witoszek 2011; Anker 2020).
I draw on ethnographic fieldwork among young climate activists and their local community in Stavanger and present selected ethnographic observations about changes in and contestations about what goodness means relationally, temporally, and affectively in the oil capital of one of the world's richest countries whose wealth is gained from fossil fuels. Stavanger is an interesting case: inhabitants are acutely aware of the destructive consequences of the oil and gas industry for the global climate, while oil and gas make up the foundation of the local labor market and the finances of the national welfare state. Furthermore, in the relatively small city of Stavanger, activists and industry people often share social ties of friendship and family.

What generational negotiations over the meaning of goodness are at play, when young people and adults imagine post-petroleum worlds and the transitions necessary to realize them? What visions of the future crystalizes when registers of goodness shift? And what happens to the narratives of the past when goodness is reframed? By unpacking these questions, the paper offers novel understandings of the social complexity of living well in a warming world by illuminating the generational dynamics at play in negotiations over what goodness means empirically.

706 ENABLING NET-ZERO FUTURES: THE AFTERLIFE OF KNOWLEDGE INFRASTRUCTURES IN POST-PARIS OFFSETTING

Kamilla Karhunmaa (University of Helsinki) Mira Käkönen (University of Tampere)

Knowledge infrastructures are key in the making and maintenance of climate policy instruments. In this paper, we focus on carbon offsetting as a paradigmatic example of a policy instrument that is both dependent on and generative of an elaborate assemblage of carbon accounting metrics, methodologies and expert networks. Because these knowledge infrastructures are opaque, technical, and expert-led, they leave little room for critical interventions. The possibility for such interventions emerges at temporal disjunctions – or when the continuity of stabilized mechanisms is under negotiation and what has faded in the background moves foreground. We argue that such a moment of disjunction opened following the negotiation of the Paris Climate Agreement.

Drawing on critical infrastructure studies and STS, we analyze the paucities and continuities of carbon offsetting in a post-Paris era. While increasing attention has been paid on the 'lively' remnants of built structures, the afterlives of knowledge infrastructures have received less attention. We focus on the making of Article 6 market mechanisms and analyze the debates that have shaped them prior to, during and after the COP26 negotiations in Glasgow. We also compare the emergent mechanisms and methodologies with those of the Kyoto-era. We show how the knowledge infrastructure of offsetting has been both questioned and reasserted, and demonstrate the persistence of offsetting infrastructures through the carryover of previous 'zombie' carbon credits and methodologies. This continuity takes place in the current predicament of a hyphened global pressure for climate

action and the increasingly prominent governmental assemblage of 'net-zero', which effectively creates fuzziness on what counts as climate action. We argue that making climate ambitions 'easy' and business-friendly through sustaining carbon offsetting is in effect coupled with the lingering power effects of 'zombie infrastructures'. We also highlight the problematic commensurabilities, (in)visibilities and harms this infrastructural afterlife potentially perpetuates.

1024 CONTESTING THE TIMESCAPES OF DISASTER RISK REDUCTION: IMPLICATED TIME, RHYTHMS AND THE 'SOFT' RESISTANCE IN DEALING WITH PERMANENT GAS EMISSIONS FROM VOLCANO MASAYA, NICARAGUA

Sebastien Nobert (University of Montreal)

Drawing on the social theory of time and on the social studies of risk and disasters, this paper engages with the social life of volcanos by exploring the entanglement of rhythmic relations between the volcano Masaya, located twenty kilometers southeast of Managua, in Nicaragua, and those who have learned to live with the detrimental effects of its permanent volcanic emissions (PVEs). Rather than categorizing those impacted by PVEs as Masaya's victims, the paper explores how their capacity to deal with volcanic toxicity implies an act of 'soft' temporal resistance, which consists of a continuous negotiation over what the now/actual means and that allow a person to subtly transform contingency into something different or new to the timescapes of disaster risk reduction and developmentalism. It argues that those negotiations are activated through rhythmic productions that distort univocal temporal experiences and actualise what is coming into multiple potentials. Building on ethnographic observations, field notes, and image analysis, the paper examines three interrelated rhythmic tales that help us understand how those impacted by PVEs are using and fusing with Masaya's temporalities in ways that help us recast alterity into possibility. The paper concludes by highlighting the relevance of temporal resistance when studying those affected by hazards and risks and argues for a more complex understanding of the implicated processes of spatio-temporal production in shaping our relationship with the more-than-humans.

Room N102 - Panel 016. ENGINEERING AND CARING FOR LIVESTOCK FUTURES IN THE ANTHROPOCENE

Pierre du Plessis (University of Oslo, Oslo School of Environmental Humanities)
Else Vogel (University of Amsterdam, department of Anthropology)

The effects of climate change, deforestation, pollution and over-hunting fundamentally reshape multispecies relations across the globe. This panel will engage with the effects of these processes on various communities' relations with farm animals or livestock.

While sustainability discourses typically enact wildlife as a precious, vulnerable resources worth cherishing, farm animals, in the Anthropocene, tend to emerge as deeply problematic, polluting nature-culture hybrids or even monsters (Anneberg et al., 2013; Tsing et al., 2017).

And yet, environmental concerns spur changes in animal husbandry practices, business models, farming techniques and forms of life. As the effects of cattle "flatulence" (Govindrajan, 2016) are felt around the globe, scientists, engineers and farmers experiment with food rations, and other interventions on cows' bodies to limit their emissions, including innovations in livestock genomics that attend to the future animal's environmental impact. Meanwhile, livestock's impact and dependance on water reserves and soil quality evoke changes in global trade networks of livestock breeds, reconfiguring landscapes and livelihoods.
Such developments spur complex ethical and political questions. Farm animals emerge at the heart of troublesome "more-than-human" biopolitical projects (Asdal et al., 2017); involving situated assessments of who/what deserves protection and what is considered expendable for the greater good. In this panel, we explore the practices, technologies, politics and ethics of experiments in multispecies cohabitation involving (but not exclusively) humans and livestock; beings whose conditions of possibility are, in complicated ways, enclosed in each other's existence (Mol, 2021).

We ask: How do climate change and agricultural transformations shape each other? How to practices aimed at creating more sustainable food systems impact the lives of farm animals and their keepers? How does the practice, governance and commercialization of livestock production incorporate, negotiate, resist or displace concerns with pollution, deforestation, biodiversity loss and other planetary threats? Rather than answering such questions in general terms, we invite contributors to tease out the situated ethics of particular multispecies entanglements. What are the "histories, imagined futures, ecologies and configurations of life and death" (Van Dooren, 2019) animating situated sites and situations? What do these teach us about how relations between humans, farm animals and their environments could be otherwise?

We welcome ethnographic papers that address a range of topics and places; as well as theoretical or methodological contributions, historical examinations or notes from the field.

Session 1

416 THE BEAUTY AND THE MEAT. THE HUMAN-ANIMAL RELATIONS OF LIVESTOCK BREEDING, MEAT PROCESSING AND MARKETING

Martin Winter (Technical University Darmstadt, Department for Sociology) Désirée Janowsky (Technical University Darmstadt, Department for Sociology)

Farm animal husbandry is largely designed to produce meat for human consumption. In the production of meat, however, the production and handling of livestock is only one aspect among many. Nevertheless, it is this production step that is problematized, either for reasons of animal ethics or environmental and climate policy. We want to ask how (and if) livestock animals are enacted in different technoscientific practices of meat production and related power relations.
Theoretically, we build upon concepts from Feminist STS to examine how meat is co-produced with various social power relations. However, the core of our investigation is the question of the 'multiple' (A. Mol) enactments of meat and how it is entangled in multispecies entanglements. Empirically we build upon extensive (in some cases virtual) ethnographic fieldwork at food related trade fairs and butcher training seminars. We will present three cases: livestock breeding, meat processing and marketing.
In practices of livestock breeding, animals are staged as means of production in a competitive relation to each other. At trade fairs, competitions similar to beauty contests stage animals as aesthetic and economic factors. The processing of meat products then is centered on the specialization and expertise of the butcher: the butcher is positioned in relation to the resource animal and transforms it into a cultural product. Meat marketing enacts a

relation between the consumer and 'nature'. Meat is placed in a relation between the predominantly male consumer and animals that have lived in the wild nature. We argue that the domination of 'nature' by producing and consuming meat relates to constructions of masculinity and male dominance. We want to raise the question of how these local power relations are connected and what this means for the political shaping of animal husbandry.

190 CULTURED MEAT AS PROMISSORY ASSEMBLAGE

Mariana Hase Ueta (Technische Universität Dresden) Frank Müller (University of Amsterdam)

The environmental impact of livestock farming challenges human-animal relations. The COVID-19 pandemic has furthermore drawn attention to livestock industries as spaces that potentially spur zoonotic events. In this context, cell-cultured meat, or meat made in the lab, emerges as a technopolitical innovation to multispecies entanglements, promising solutions to some of the most devastating impacts of food protein production. We conceive of synthetic protein production as a promissory assemblage, dissecting three interlinked sectors. (1) Environmental: In response to livestock's high water and carbon footprint, the industry promises to reduce the environmental impact of global protein production. (2) Ethical: Aiming to shift consumption habits, the industry promises less animal suffering and killing. 3) Health: Given strict regulations for quasi-laboratory ways of production, the synthetic protein industry promises to reduce the risk of future zoonotic events and to use bioengineering to make meat healthier. While this promissory assemblage could deliver some positive impacts, we wish to highlight other, far less calculated risks, such as the amount of energy demanded to upscale the production process, the supply chains of mediums, and the securitization of laboratories in order to avoid contamination. We argue that, as a promissory assemblage, cultured meat includes a set of uncertainties which, paradoxically, nurture the cultured meat industry's promissory lure. Our contribution is based on expert interviews with scientists, food designers, investors and politicians, as well as visual analysis of synthetic food products' promotion. Looking at cell-cultured meat as a "cluster of promises" (Berlant, 2011), we side with attempts within STS to imagine an alternative techno-scientific future for meat production and consumption.

371 ENGINEERING VALUES THROUGH LIVESTOCK GENOMICS

Jenske Bal (University of Liege) Simon Vanderstraeten (University of Liege) Roxane Gabet (University of Liege) Adam Searle (University of Liege) François Thoreau (University of Liege)

Climate catastrophe and its ecological implications fundamentally challenge the ways humans interact with other species. These changes are increasingly pronounced in industrial livestock production. Farmers, breeding companies, veterinarians, researchers, and breed organisations are concerned with the accumulative capacities of livestock whilst simultaneously envisioning resilient, diverse and/or environmentally friendly animals. Manifold valuation processes occur through practices at the confluence of genetics and big data. Genomic infrastructures not only create representations of molecular life but allow for contestations of what the 'ideal' animal pertains and to whom. Through these emergent practices, specific forms of human sociality are by-produced through livestock farming. The values that shape breeding practices shed light on broader human relations with nonhuman life. In this light, we pose a series of questions about 'engineering values'. To what extent can values be reduced to specific gene loci, and consequently translated into phenotypes? Who has access to these shifting knowledge practices, and with what authority? Broadly, then, how is genomic information governed? We examine how core values such as environmental resilience, biodiversity conservation, and notions of human and nonhuman health are translated into and reflected by the technoscientific practices and political economies of genomics. In outlining this research agenda on genomics, infrastructures, and the valuation of nonhuman life, we ask how different social actors perceive, govern, and relate to livestock through lenses of genetic material, analysis, and data.

425 A DOOMED TECHNOLOGY? ON GENE EDITING IN BAVARIAN LIVESTOCK AGRICULTURE, POLICY FIELD CONFLICTS AND RESPONSIBLE RESEARCH & INNOVATION

Amy Clare (Technical University of Munich) Ruth Mueller (Technical University of Munich) Julia Feiler (Technical University of Munich)

The development of the gene-editing technology CRISPR -Cas has been warmly welcomed by life scientists working in the area of livestock breeding. Many life scientists praised genetic editing applications like creating circular economy animals whose carbon footprints are minimized, or disease-resistant chickens as the next steps in livestock agriculture. Frequently scientists' legitimization of these genetic editing applications is articulated as potential positive outcomes for the environment, public health, and animal welfare. In Bavaria, Germany, a research consortium was formed between life scientists, local agricultural stakeholders (e.g. breeding

organizations), and Science and Technology Studies (STS) scholars to examine the technical and social possibilities of these livestock applications. While many scientists expressed assured optimism, agricultural stakeholders were less optimistic when it came to whether or not they thought these genetically edited animals would make it out of the laboratory and into the barnyard. Through empirical engagement with agricultural stakeholders, we witnessed the complexities in Bavarian livestock agriculture and how these politics impact local farmers' abilities to adopt and integrate these technologies into their practices. In this paper, we explore the tension between agendas in the science and technology policy field and in the agricultural policy field in Bavaria and provide insights as to what these means in terms of responsible research and innovation when it comes to livestock, gene editing, and diverse stakeholder interests.

Room N118- Panel 024.EMOTIONS AT WORK: THE AFFECTIVE DRIVERS OF TECHNOSCIENTIFIC WORKPLACES AND FUTURES

Klara-Aylin Wenten (Department for Science, Technology and Society, Technical University of Munich)
Alev Coban (Department of Human Geography, Goethe-University Frankfurt)

This session will engage with emotions at work. On the one hand, we seek to explore the different emotions felt at workplaces of knowledge production and technology development. On the other hand, the session foregrounds how emotions work in these settings. We observe that current phenomena at technoscientific workplaces such as agility, rapid prototyping or the entrepreneurialization of technology development enwrap workers in affective language and practices about promising technoscientific futures. Feelings such as passion, joy and enthusiasm in (agile) companies, makerspaces, research labs, home offices and platform enterprises illustrate how workers become responsibilized to engage emotionally with their work, often having the aim to drive national, institutional and personal progress.

In this context, feminist (STS) scholarship highlights the importance of asking what emotions do. They point our attention to the emotional side of daily life as well as the discursive dimension, power-laden structures, and representations that drive collective affect (Ahmed 2004). Affective attachments to tech work normalize its often-precarious norms and scholars therefore argue that workers' emotions are entangled with corporate objectives and neoliberal logics (Cockayne 2016; Davies 2017; Gregg 2011). Thus, emotions at work are characterized by exploitative dynamics of (affective) oppression, control and invisiblized devalued labor (Amrute 2019; Crain et al. 2016; Resch et al. 2021). However, attending to the sensations at workplaces, the involved bodies, emotions and identities also uncovers solidary feelings and care work, which open up new paths for emancipatory ambitions (Coban and Wenten 2020).

This panel seeks to extend such scholarship by exploring the intersection between affect, work and tech/knowledge production. We invite papers (and also other forms of input) that discuss the ambivalent feelings of technoscientific work, their risks and challenges, but also the political opportunities for emancipatory technoscientific futures.
Potential foci include:

- The emotional investment and bodily sensations of technoscientific progress
- Socio-material intimacies between workers, materials, technologies and workplaces
- Feeling in/equalities in the workplace
- Affect as a driver of care, emancipatory moments or resistance at technoscientific workplaces
- The historicity and context-specificity of emotions at work
- The increasing affectivity of knowledge work through pitching, hackathons, user-centered design, etc.
- The in/visibilization of care and emotions by AI, automation technology, workplace standardization, etc.

Session 1

715 "CERN RUNS ON A LOT OF 'GOODWILL' AND FASCINATION": EMOTIONAL DRIVERS OF WORK AND SOCIALIZATION IN HIGH-ENERGY PHYSICS

Helene Sorgner (University of Klagenfurt)

What keeps a technically and organizationally enormous enterprise such as the experiments in contemporary high-energy physics running? Not least, the emotional investments of its constituents and a shared excitement for technoscientific progress, which resonate with traditional conceptions of a scientist's vocation as well as affect-driven contemporary tech culture. Despite concerns that the lack of discoveries and the ensuing 'crisis' within the scientific community might discourage young scientists from pursuing a career in high-energy physics, the publicly displayed enthusiasm for its technological prowess seems undeterred.

Based on interviews with doctoral students and post-docs working in high-energy physics experiments at CERN's Large Hadron Collider, this talk explores affective attachments to technoscientific work and the role of emotions in the socialization of novice researchers. In accounts of their experiences as members of large international collaborations running particle detectors and experiments, junior researchers describe a passion for technology development, the pride of participating in a unique endeavor, and the capacity to instill fascination for one's work in others as the emotional drivers of their work. Working in large research collaborations, however, is also associated with feelings such as loneliness, frustration, and being invisible, which disaffect young researchers

from their work and their community. I analyze the valuations carried by such expressions of emotion and (dis-)affection and show how junior researchers reflexively identify with and distance themselves from collective affects and expectations. Between professed devotion to the collective effort and self-preserving skepticism, the emotions expressed in interviews convey an inherent ambiguity rooted in the precariousness of junior researchers' personal futures and the future of the discipline as a whole.

87 CALIBRATING EMOTIONS AT THE BENCH AND THE BEDSIDE IN TRANSLATIONAL SCIENCE

Isabel Briz Hernandez (The Chinese University of Hong Kong)

Based on 15 months of fieldwork on the oncology trials with immunotherapy for cancer treatment in mainland China, in this paper I explore the engagement and detachment practices that lab members cultivate towards clinical subjects. On one side, lab members treasure the blood samples sent back to the lab not only for the new scientific and biomedical knowledge that they can potentially represent, but also to find out about the emotions that patients and their families experienced during treatment. These blood samples serve for lab members as a proxy to calibrate how their work at the bench has been interpreted at the bedside. However, as much as lab members find alternative ways to engage with the feelings of patients and their families, they also they are also reluctant to have direct contact with them and avoid being informed about their personal life. Given the uncertainty of translational science, I argue that lab members working at the bench must learnt to calibrate their own emotions and expectations about the experimental treatment to not be dashed out by the hype around biomedical technology and the reality at the bedside.

830 DOING BIOBANKING: IDENTITIES, AFFECT, AND VALUATION OF DIFFERENT KINDS OF WORK IN AN INCREASINGLY PROFESSIONALIZED FIELD

Lisa-Maria Ferent (University of Vienna) Ulrike Felt (University of Vienna)

Biobanks are not only socio-technical infrastructures which collect, store and provide samples and data for research, but also workplaces that are tied to an emerging research culture and aim to facilitate research collaborations. Since the emergence of biobanks more than two decades ago, biobanking practices have become increasingly standardized and professionalized. Yet, biobanking is a diverse and dynamic field, that is still grappling with numerous challenges and struggles to define uniform roles or aims. This can be seen especially in hospital-based biobanks situated at medical universities, where relations and tensions between being a service-oriented infrastructure, contributing to an emerging biomedical research field, and playing a core part in clinical care at hospitals play out in different forms.

This paper will investigate biobanking at the interface of medical universities and hospitals, to look at how different forms of academic work - be they service, research, or clinical care - are experienced, valued, and ascribed to roles.
The analysis draws on qualitative interviews (done in the framework of the project BBMRI.at#2) with people working in the field of biobanking - including biobank managers, researchers, and clinicians - at different hospital-based biobanks, predominantly in Austria. This data also opens up opportunities to investigate how affective dimensions of that work, such as "emotional ownership" of samples or data, are articulated; how various roles and identities, such as for example "being like a midwife" for research projects, are ascribed to specific practices; and how visions of career trajectories come to matter when doing biobanking.
By being attentive to the role of affects in such processes closely related to knowledge production, this paper will thus look at how different kinds of work are entangled with emotions, identities, and valuations in a workplace embedded in an increasingly professionalized field.

Room N105 - Panel 027. SITUATING DEMOCRATIC FUTURES

Irina Papazu (IT University of Copenhagen)
Andreas Birkbak (Aalborg University in Copenhagen)
Laurie Waller (University of Manchester)
David Moats (University of Helsinki)

Following on from the forthcoming book Democratic Situations (Mattering Press 2022), this panel invites papers interested in going beyond democracy as an assortment of abstract ideals, an off-the-shelf theoretical construct or taken for granted political reality. It encourages participants to ask what shapes democracy might take and how democratic encounters and situations may surprise us if they are allowed to emerge through analysis or other types of active engagement rather than deployed as a theoretical starting point.

Democratic politics has been conceptualized as an incredibly broad term in STS (Brown 2015) and is often invoked to argue for making science and technology more 'democratic'. But what is the relationship between STS analyses of democratic politics and ambitions for a politics that can be called 'democratic'? While politics and the political have been widely explored, there has been a tendency to simply assume that democratic politics is an ideal available to guide analyses and interventions.

We find this challenge topical yet underexplored in current STS research. How can democratic politics be understood and studied based on the empirical-conceptual repertoires and methods of STS? We welcome papers that aim to contribute to the study of democracy with a small d, by investigating democracy as a rapidly shifting and techno-scientifically entangled moving target. We are interested in exploring how, through empirical analysis of practical encounters, democracy may emerge as something that fluctuates; something that must be practically coordinated and is often contested as well as mobilized for different purposes. Through such situated analysis, democracy as a singular model vanishes and becomes a multiple phenomenon.

We are also interested in exploring how to study and re-describe central categories of political life such as the electorate, the community, or the public, without either reifying or delegitimizing them. And, following from this, how do we understand less obvious sites of democratic politics as exactly that: sites that are, in perhaps surprising ways, relevant to democracy today? These questions are especially urgent in a time when democratic politics, foundational to many contemporary societies as well as to our technoscientific futures, seems to be endangered and under attack from many sides. What risks are involved, if any, in unpacking institutions and practices assumed to secure and support 'modern democracy'? And, conversely, under the current circumstances, do we dare not to unpack the workings of our systems in time to learn more about them?

We invite papers which study what we call democratic situations empirically, and which do not take for granted that all politics are democratic or that democracy is what political scientists claim it is. These might include papers about formal or informal procedures involved in democratic politics, technologies invested with democratic capacities, or controversies over what counts as democratic in specific empirical contexts.

Session 1

523 LIVING LABORATORIES AND INNOVATION PARLIAMENTS: NEW SITES FOR DEMOCRACY

Stefan Böschen (RWTH Aachen University) Julia Backhaus (RWTH Aachen University) Stefan John (RWTH Aachen University)

The identified shortcoming of STS research to reflect on the different shapes democracy may take and the many situations where it can be encountered is becoming increasingly problematic due to a shift of research towards societal problem-solving (e.g. grand challenges or sustainability transitions) and a remarkable expansion of academic research into society. So-called "real-world experiments" (Groß/Krohn 2005), which are performed as "citizen science", "upstream engagement" or "living labs", to name only some, have emerged as new sites of knowledge production. Thus far, accompanying social scientific research prevailingly focuses on methods and procedures for the combination of different types of expertise in real-world settings. However, failing to recognize these sites also as new sites for democracy renders some of these activities expertocratic or technocratic. Therefore, the decisive question is whether 'society is allowed to speak back' (Engels et al. 2019)?

Against this background, this contribution tackles the question how such processes of 'speaking back' can be constitutionalized to foster a democratization of real-world research activities for societal problem-solving.

Following the thesis that local Innovation Parliaments might offer a way forward, this contribution takes three argumentative steps. First, it sketches the strengths and weaknesses of research in living laboratories so far. Second, it shows empirically, building on 30 interviews with Living Lab PIs at and around RWTH Aachen University, that these transdisciplinary forms of collaboration and knowledge production are oftentimes inappropriately constitutionalized to allow society to 'speak back'. Third, a model of Innovation Parliaments is drafted and their potential to embed Living Lab research in wider processes of articulating and addressing societal problems is illuminated.

86 CHARTING POLITICAL WATERS

Endre Dányi (J.W. Goethe University, Frankfurt am Main) Amade M'charek (University of Amsterdam)

As Michel Serres pointed out in The Natural Contract (1995), the ship has been the ultimate metaphor for a polity, at least in 'the West'. Many terms associated with politics – most notably 'governing' – refer to diverse skills and knowledges required to navigate a ship. While such skills and knowledges have been analysed extensively in the social sciences, there has been comparatively little discussion about the complex environments of the ship-as-a-polity, namely different kinds of waters. Our paper aims to address this hiatus – not by treating specific bodies of water as political actors in themselves, but by examining what modes of dis/connection become accessible with the help of water in relation to political practices. Drawing on our ethnographic works on the Danube, the Mediterranean sea, an oasis at the border of Tunisia and Algeria, and groundwater in an Aboriginal community in the Northern Territory in Australia, in this paper we explore four such modes of dis/connection: rivalry, othering, refuge and seepage. We use these as topological figures in order to foreground the skills and knowledges they necessitate, both in politics and in social scientific research.

136 SUSPENDING DEMOCRATIC (DIS)BELIEF: TECHNODEMOCRATIC IMAGINARIES OF SOLAR POWER IN MOROCCO AND TANZANIA

Monamie Haines (Technical University of Denmark) Sharliss Moore (Michigan State University) Turner Adornetto (The Ohio State University)

This paper proposes the concept of technodemocratic imaginaries (TDIMs) to supplement the widely-used framework of sociotechnical imaginaries (STIMs) for analyzing nonliberal political contexts in energy social science research. Taking the power of coproductionist analysis of STIMs seriously, TDIMs highlight the inherent instabilities and ruptures within overarching STIMs by arguing that not only are particular groups marginalized and excluded but that they continue to practice and mobilize their own imaginaries of collective governance and justice vis-à-vis energy systems. Also, in contrast to studies of contested STIMs, where a shared mode of (often elite, nationally-circulating) knowledge politics undergirds different imaginaries, TDIMs includes subaltern modes of political engagement and knowledge-making. TDIMs expand conceptions of democracy--often implicitly conceptualized as liberal democracy--to include shared practices of credibility in nonliberal political orders. The intent is not to promote democratic relativism but rather to ask scholars and international energy-access practitioners to suspend their democratic disbelief when studying energy matters in so-called nonliberal contexts. We develop the concept of TDIMs by comparing two African nation-states–Morocco and Tanzania–to show how the states and subaltern groups do (or do not) develop TDIMs related to solar power. While international governance organizations often portray Morocco as authoritarian and Tanzania corrupt, each state differently experienced (de)colonization, is part of different transnational assemblages, and practices different relationships with domestic subaltern groups. Whereas low-income citizens and indigenous groups seek integration into the Moroccan state's STIM, the Maasai in Tanzania chart their own TDIM separate from the state and international development groups.

813 PROTOTYPING DEMOCRATIC FUTURES IN EDUCATION

Simy Kaur Gahoonia (IT University of Copenhagen) Christopher Gad (IT University of Copenhagen)

This paper explores how the Danish school sector performs and reworks engagement with digitalizing society and the future of democracy through prototyping. Public schooling is routinely mobilized by the state to frame societal problems and their solutions. By law, Danish schooling should prepare students for participation, co-responsibility, rights, and duties in a democratic society. Recently, this has come to include preparing students for life in an increasingly digitalized democracy. We investigate the Ministry of Education's Trial of Technology Comprehension (2018-2021). This was an experimental effort to determine how best to introduce 'understanding of technology' into compulsory schooling as a generally formative, creative-constructive, and critical, subject

matter combining computer science and design approaches to impart a holistic comprehension of technology on students. The curriculum suggested that design approaches, especially, were conducive to agency and empowerment in digital democratic life, making it imperative that students learn to materialise digital artefacts through prototyping. This takes prototyping beyond its traditional use in design and systems development, making experimentalism central to the conduct of citizenship and social life. Based on ethnographic fieldwork and document analysis, we examine prototyping across scale in the trial programme. 1) as a curricular concern in the curriculum materials and proposed learning outcomes; 2) as object of teaching and learning in classroom practice; 3) as organisational practice in the trial's own project design and execution. We argue that prototyping functions as a device for intervention in the complexity and uncertainty of a democratic future proliferated by digital technologies. In this situation, the capacity of prototyping is to keep matters of concerns both open and closed. We critically examine the role of the prototype in a democracy in 'perpetual beta' and the response: to educate students to become designers.

253 THE POLITICS SURROUNDING BIG TECH: UNDERSTANDING THE DEMOCRATIC CONFIGURATIONS THAT SHAPE OUR LIVES

Ivan Veul (Institute for Science in Society, Radboud University)

In today's digital society, information, and communication technologies (ICTs) mediate the lives of billions of people. Search engines shape people's information diets. Social media shape how people interact with each other. And streaming platforms shape how people consume media. The tremendous capacity of these ICTs to shape societies has made them the subject of heavy scrutinization. Many issues have been raised about online tracking, the spread of disinformation and biased algorithms. However, recent critiques on the removal of Trump's Twitter account or on Facebook's lack of response to internal concerns about their anti-disinformation efforts, suggest that part of the indeterminacy with influential ICTs lies in how decisions are made about these ICTs. Thus, furthering the situation might not just require technological change, but also improvements in the (sub)political configurations surrounding these technologies. To improve these political configurations, we need theoretical frameworks that can help us describe what they look like and prescribe how they could be improved. While there are copious descriptive and prescriptive frameworks in political theory, we must be careful not to blindly reproduce them in contexts outside of state politics, because it would lead us to look for politics in the wrong places and to ask the wrong questions (de Vries, 2007). In this paper, I will thus articulate a novel prescriptive approach to politics in the context of ICT governance. This novel approach builds on democratic theories by American pragmatists (Dewey, 1991) and STS reinterpretations of these works (Dijstelbloem, 2007; Latour, 2007; Marres, 2005). To illustrate the usefulness of my approach, I will apply it to Google's Privacy Sandbox – a project where Google collaborates with the ad-tech industry and the World Wide Web Consortium to develop alternatives to third-party cookies in Google Chrome.

Room N115 - Panel 030. POLICY INSTRUMENTS AND THE MAKING OF SOCIOTECHNICAL FUTURES: PRODUCTION, CIRCULATION, AND EFFECTS

Nicolas Baya-Laffite (Université de Genève)
Aykut Stefan (Universität Hamburg)
Bilel Benbouzid (Université Gustave Eiffel)
Marlyne Sahakian (Université de Genève)

Policy-making and public debate in technological societies are characterized by heavy reliance on science-based visions of probable, desirable or potentially catastrophic futures. Policy instruments play a key role therein, as sites where such futures are produced, circulated and put to work in the governance of very diverse sociotechnical matters at multiple sales. As such, they offer an interesting vantage point from where to examine the politics of technoscientific futures.

In keeping with fruitful developments at the crossroads of political sociology and science and technology studies, this panel seeks to shed light onto instruments and future making in different policy sectors (climate change, energy, agriculture, digital technologies, agriculture, urban development, and industries) and thereby on how instruments and future-production devices circulate from one sector to another.

Papers are invited to consider instruments and issues at different scales - global, national and local. We welcome in particular comparisons across sectors and levels of intervention. They can focus on their production, circulation or effects in regard to future-making practices, techniques, or knowledge. Papers can deal with one specific policy instrument or compare different instruments, in one or in multiple sectors. We welcome, for example, papers examining the use of impact assessments and scenarios in one sector (i.e. in environmental or digital governance) and / or looking at how they migrate across sectors.

Authors are invited to explore, among other issues: What kinds of knowledge, actors, and scales are privileged by / for different policy instruments in the production of futures? How are different instruments framing temporal and geographical scales in the production of futures? What tensions and conflicts can be observed? How do different policy instruments foster the circulation of futures across social arenas ? What effects do they produce in public debate? How is the production of future-knowledge imbricated in conflictual processes of collective construction of futures ?

We hope to cover as many instruments and sectors as possible to foster potential comparisons during the debate and in future work. On this basis, this panel aims at initiating a research programme gathering scholars from STS and other thematic domains of expertise, raging from energy to AI, around policy instruments and future making practices.

Session 1

726 IMPACT ASSESSMENTS AND THE MAKING OF SOCIOTECHNICAL FUTURES: FROM THE ENVIRONMENT TO CYBERSPACE

Nicolas Baya-Laffite (University of Geneva)

It has long been known that the society of science and technology is also the society of the damage to its own technoscientific development. The question of their government is therefore central. Now, if the government of technosciences and their effects is at the very heart of politics, the capacities of societies to know and act on their current and future trajectories are also produced in the same socio-technical regime. This makes it necessary to study both technosciences and their government agencements, thereby coupling the study of the increased use of expertise for policy-making with the study of the increased sophistication of technical supports of governmental action. Policy instruments and their related processes of governance are central objects at this crossroads – and as such they invite us to question them, not only in terms of how they allow producing orders, but also as how they produce of the non-governability of what we seek to govern. In this paper, I examine this tension by considering the trajectory of impact assessments as instruments for the identification of future consequences of a current or proposed action from environmental governance to digital governance. Following impact assessments works as a thread to examining historical trajectories in terms of problematisation and governance of environmental and cyberspace transformations. This comparison would be a possible way to explore the (non-)governability of these conflicting agencements, but also hypotheses on the nature of instrumental evolutions in their governance.

123 SECURITY BY PRINCIPLE: RE-INSTRUMENTING CYBER SECURITY ASSURANCE

Matt Spencer (University of Warwick)

Cyber security's visions of the future range from dramatic spectacles ('cyber pearl harbour') to mundane anticipatory practices. Here I focus on the latter: cyber security assurance, processes for accounting for technical systems' contingencies, their futures of possible failure (Spencer 2021).

If we start with Lascoumes and Le Galès' suggestion that 'every [policy] instrument constitutes a condensed form of knowledge about social control' (2007: 1), we might then 'read' instruments such as those of cyber security assurance for the kind of anticipatory control they embody.

Cyber security assurance is a tradition established in the 1960s and 1970s and associated originally with military needs. The question of how computer systems could be made secure was entwined with that of how security can be known (MacKenzie 2004). The 1980s and 1990s saw the rise of global standards for security assurance evaluations (ISO 15408), as well as a broadening of concern from the needs of the military and the state to those of commercial organisations. Recent years, however, have seen a fresh set of interventions in this landscape, taking the form in the UK of a turn away from standards towards a new paradigm: that of 'principle based assurance'.

This paper draws on interviews with policymakers, security professionals and technology developers to examine principles as an instrument of government. Posed in contrast to the standardisation of technical products, principles are intended to distribute capacities for good judgement about the appropriateness of technology choices. Looking at the UK's interpretation of the NIS directive, the adoption of cloud technologies in government, and a recent pilot of principle based assurance for cross domain solutions, I examine the reasons for this shift, and its implications for the sites in which contingency is addressed, and potential it creates to challenge technological essentialism with a more relational understanding of security.

462 TINKERING WITH POLICY INSTRUMENTS OF - AND THROUGH - DIGITIZATION: SMART CITY BERLIN AND THE INSTITUTIONALIZATION OF SUBPOLITICS

Julia Valeska Schröder (Humboldt Universität Berlin)

Digital policy is widely associated with future making: digitization is often presented to typify a new era that fundamentally re-shapes society. Yet, only recently, digital policy has broadly been recognized as a central policy field to actually accompany, shape and control digital futures and only incrementally gets publicly institutionalized in western Europe. The question arises, how digital policy is actually performed on the ground - which instruments and practices enact envisioned digital futures within the frame of digital policy?

For a long time, "the network" and the state were constructed as ontological, epistemological and political antagonisms. Now, the phenomena "state" and "digitization" are closely linked, both practically and conceptually: Ideas of the "Digital State" and the "Smart City" have become a widespread point of reference. Even though they are about to materialize as political projects, there still is a lack of analyses targeting how state actors practice "digital politics" and commonly sought "digital sovereignty".

In my contribution, I draw on a one-year ethnographic fieldwork in the policy field of digital policy in Berlin to elaborate on two especially intriguing policy instruments: "strategypractice" and "prototyping". Having followed Berlin's ongoing attempts for realizing and operationalizing future visions of a "Smart City" allows me firstly, to introduce "strategypractice" and "prototyping" as policy instruments, secondly, to elaborate on their enactments as technopolitical practices and thirdly, specify the ways they are used for reshaping and reconfiguring urban orders.

Finally, it will be argued that the enactments of "practicestrategy" and "prototyping" both - in different ways - combine material politics, political thinking and experimental imperatives, in order to practically intervene in urban transformations and future making, while at the same time tinkering with governance itself by (re-)ordering institutional and administrative processes from within.

525 POLITICS OF CONTROLING ARTFICIAL INTELLIGENCE

Benbouzid Bile (Centre Internet et Société)

No one can clearly formulate the contours of the notion of artificial intelligence. This definitional problem is due to the fact that AI is characterized not so much by the different scientific approaches (symbolic, connectionist, probabilistic etc.) or its objects of study (vision, language, reasoning etc.), as well as by the multiple referential functions of the nominal syntagm: sometimes mobilized as a concept, other times only evoked as an artifact or, when it is written in capital letters (in the manner of the Church or the State in French, for example), as a diffuse thing that can act at any moment in our daily life. The hypothesis supported in this presentation is that these multiple ways of defining artificial intelligence are at the heart of the political structuring of the public debate on AI and the controversies on its “control”. The objective of this work is to understand the social space of regulation from four different definitions of AI. It is by situating the places of AI regulation in relation to these four definitions that we can then navigate in the map of public debates about instruments to control artificial intelligence. Focusing on the instruments of government, we show the existence of four competing ways of controling AI. Finally, we propose a general framework for analyzing the mechanisms structuring the oppositions on how to control AI, using Andrew Abbott's framework fractal analysis . This framework provides elements for understanding the positions and relationships between groups and subgroups involved in AI regulation. This framework also shows that the opposition within governance between "technocracy" and "democracy" is not a fundamental opposition that divides the field of regulation into quite separate approaches, but is active at all levels: one is always the self-regulator of another.

773 PRIVATE ACTORS, PUBLIC RISKS: A SOCIOTECHNICAL IMAGINARY OF ALGORITHMIC GOVERNMENT IN EUROPE

Jana Misix (University of Twente and Rathenau Institute, The Hague)

In this paper, I discuss the narrated and imagined futures of introducing artificial intelligence (AI) to the public sector services in Europe. Public-private partnerships enjoy a prominent place in the European ‘trustworthy AI’ discourse on regulation, digital sovereignty and technological development.
Simultaneously, however, commercial AI and ‘black-box’ algorithms have shown ethical dilemmas and democratic shortcomings, and as such should be continuously questioned when deployed in the public sector. Questioning this vision, I make a case that potential long-term disruption of democratic public values is looming due to the commercial companies' involvement in this process. In a narrative study, I analyze two sets of documents: the main EU policy documents on AI and the five national AI strategies of five member states with the highest investment rates in AI in Europe (Germany, Italy, France, the Netherlands, and Spain). What agency is given to the private entity vis-a-vis the public interest? What future is being envisioned in the main policy narratives? And how are positive and negative expectations presented, anticipated and correlated? Through the lens of sociotechnical imaginaries, I critically compare and evaluate the promises, expectations, and locate the risks of public-private partnerships for the European AI. The narrative anticipates the inevitable materialization of public sector algorithms, without sufficient nuance of the issues of public versus private interest, potential path dependencies, proprietary lock-ins, as well as omit the value conflicts in terms of democratic accountability and legitimacy that may arise. In conclusion, I argue that the presently pervasive vision of privately-driven AI uptake in the public sector insufficiently addresses associated ethical and governance risks.

Room N107 - Panel 031. RETHINKING POLICIES AND INSTITUTIONS THROUGH CO-CREATION, USER-DRIVEN INNOVATION & RESEARCH IN THE WILD

Stefano Crabu (University of Padova, Italy)
Simone Arnaldi (University of Trieste, Italy)
Paolo Magaudda (University of Padova, Italy)

In recent decades, academic and practitioners alike have paid increasing attention to models of innovation whose distinguishing feature is the involvement of end-users and grassroot organizations in participatory processes that occur outside established R&D institutional settings and that, nonetheless, effectively co-produce science, technology and innovation. Scholars have developed a broad array of notions for capturing organizational arrangements and situated practices fostering the co-shaping of innovation, such as "deliberative" and "participatory" public engagement (Burgess 2014), co-creation (Voorber et al. 2014), user-driven innovation (Franke et al. 2016), and research in the wild (Callon and Rabeharisoa 2003). In the European Union, policy approaches such as Responsible Research and Innovation (RRI) and Open Science, have recognized these emerging forms of innovation as pivotal drivers to better

align technoscientific developments with the values, expectations and needs of concerned communities and stakeholders.
Despite such an increased attention to these participatory models of technoscientific innovation, many critical challenges still lie ahead and require further analysis: the unequal power distribution among participants; the long term sustainability of stakeholder engagement; the effectiveness of participatory assessments; the replicability and marketability of outcomes. At the same time, public regulators and scientific communities still appear unable to take stock of insights and "lessons learned" from bottom-up co-creation initiatives and from research in the wild activities to redesign their strategies and policies.
We encourage social scientists, STS scholars and practitioners to submit theoretically, empirically, and methodologically oriented papers exploring "alternative" forms of innovation that are primarily steered by citizens and "non-experts" and examining how they can contribute to rethink the dominant institutions and policies shaping technoscience.

Session 1

43 POLICY LEARNING LABS - INNOVATIVE APPROACH TO INNOVATIONS

Aleksandra Gabriel (Krakowski Park Technologiczny) Monika Machowska (Krakowski Park Technologiczny) Agnieszka Włodarczyk-Gebik (Krakowski Park Technologiczny)

Krakow Technology Park developed the idea of Policy Learning Labs, as a new co-creative method aimed o develop and implement innovations. Policy Learning Labs (PLLs) main aim was to get common understanding of new technologies and how to support them by instruments and tools available to the policymakers. The idea was to involve different stakeholders (representatives of business, society, science and public administration) from the very beginning of the process and to allow them to discuss the needs, challenges and expectations from different perspectives.

In 2020 and 2021 a series of Policy Learning Labs took places. The main assumption of the labs was to give the priority and voice to representatives of business (both start-ups providing innovative technologies and larger production companies willing to digitalise), but also to research organisations (technology providers) and NGO's (technology end-users) . The discussion, supported with co-creation methodology and tools, based on exchange of opinions, focused on the needs, challenges, expectations, opportunities. The Labs gave policymakers the possibility to hear from the practitioners and end-users their recommendations on how to boost the development of innovations and how to improve and better align the financial support instruments. Recommendations from PLLs were included in Malopolska Regional Innovation Strategy for 2021-2027.

The involvement of a diverse group of recipients to participate in the discussion on needs and challenges led to interesting conclusions. The set of recommendations for the new policy have been prepared, basing on bottom-up, truly user-driven innovation.

The idea of Policy Learning Labs is a scalable methodology which can be used for designing and upgrading polices. Giving the end-users the leading role in the process, and putting the policy representatives in the shoes of learners ensures the research in the wild approach.

528 THE TAILOR AND THE SPARROW: CO-CREATING THE MUNICIPALITY OF THE FUTURE

Anja K. Ruess (Technical University of Munich) Ruth Müller (Technical University of Munich)

Over the past decade, 'co-creation' has emerged as a novel, broadly desired approach to innovation governance. Co-creation takes many shapes, as the number and diversity of practitioners who frame their innovation activities as 'co-creative' increase. At the same time, its promises are manifold, ranging from more successful innovations (through aligning product features with users' needs) to more inclusive forms of innovating (through the upstream engagement of publics). Particularly the latter could be seen as a response to the call for engaging members of the public before important design choices are made, which the STS community has long argued for. However, it remains to be explored whether this is really the predominant version of co-creation emerging in contemporary policy landscapes, or, which other practices, purposes and outcomes circulate. In this paper, we interrogate co-creation practices by tracing how they shape techno-society relations through the inclusion of publics in smart city contexts. Our analysis focuses on a German mid-size municipality's co-creation initiative, 'Zukunftskommune@Ulm' (engl. 'Municipality of the Future@Ulm'), which aimed to include members of the public into the development and piloting of smart city technologies over the course of three years. Drawing on qualitative interviews and ethnographic fieldwork conducted at the site, we identify emerging tensions that delineate the

scope of co-creation as an innovation governance model. Simultaneously, we show how the municipality employs co-creation not only as a means to create new socio-technological arrangements, but also to (re-)articulate shared visions of desirable governance futures. Understanding these dynamics will contribute to the growing debate about co-creation by providing a nuanced outlook on co-creative innovation practices alongside their potentials and challenges. This paper is part of SCALINGS, a three-year (2018-2021) EU-funded comparative research initiative addressing the challenges of mainstreaming co-creation across Europe in multiple technological domains.

695 PROCESS OR MATERIALITY? ENTANGLEMENTS OF CO-CREATION AND RESPONSIBILITY

Simone Arnaldi (University of Trieste, Italy) Giovanni Carrosio (University of Trieste, Italy)

In recent decades, the notion of the social responsibility of innovation has made its appearance in innovation policies and practices, introducing the idea that innovative processes and their outcomes must be aligned with the needs and values of society. In bottom-up co-creation processes, the dimension of responsibility is intertwined with that of participation, linked to the definition of which actors are involved and, therefore, of which interests, values, and knowledge are considered relevant to the innovation processes.

This presentation will illustrate some Italian case studies of bottom-up innovation to describe two ways in which participation and responsibility are entangled. In all of them, innovation is conceived from its initial stages as normatively oriented, either as a response to social needs or as a form of resistance to dominant socio-economic order. In all of them, participation is a fundamental characteristic of innovative processes. Yet, the entanglements of responsibility and participation appear to take two different forms. In some cases, responsibility takes the material form of artifacts: they make the exercise of responsibility possible and they define the ways in which the response to needs, expectations and social values is organized. In other cases, participation is supported by the organizational design of innovative processes, fostering the inclusion of the various social actors and stakeholders in co-creation processes and, therefore, in defining the relevant dimensions of responsibility.

984 FAIR REWARD FOR CITIZENS' CONTRIBUTIONS IN CO-CREATION

Angela Simone (Fondazione GIannino Bassetti) Anna Pellizzone (Fondazione GIannino Bassetti) Marzia Mazzonetto (Stickydot srl)

More and more citizens are becoming key actors in innovation pathways. From makerspaces to patient-innovator initiatives and data-collecting platforms, innovation pipelines have been transformed through ideas and creativity from engaged citizens. In doing so, citizens in meaningful collaboration for responsible innovation are influential actors of the innovation ecosystem, thus shifting the economical dynamics as well as the relevance and ethos of new products and services. At the same time, critiques have been raised on the exploitation of grassroots initiatives and citizen science by innovation entrepreneurs, start-up impresarios and venture capitalists, depicted as "the public donating its unpaid work and data to privately owned, online entities" and "extension of the sharing economy into the heart of scientific research".
In innovation contexts, where the final aim is to reach the market with new products and services for profit, how ensuring that citizens' contributions in co-creation approaches can be properly recognized and rewarded? What kind of options and mechanisms can innovation ecosystems adopt to incentivize citizen-led innovation for "societal alignment" (Kuzma et al., 2018) but also guarantee a fair and transparent compensation for those who take part in the design or refinements of new marketable products?
A wide diversity of approaches has been used to reward citizens who engage with innovation through the co-creation process. A systematic review of rewards already in place together with the results of a stakeholder workshop on this topic will be presented so as to draw some tentative reflections on how but also who should incentivize and reward citizen participation in Open Innovation settings to enable responsible innovation processes.

Kuzma et al. (2018). "Cataloguing the barriers facing RRI in innovation pathways: a response to the dilemma of societal alignment." Journal of Responsible Innovation 5 (3): 338-346.

1011 TERRITORIAL TRANSLATIONS OF RRI

Thomas Völker (University of Bergen) Roger Strand (University of Bergen) Marzia Mazzonetto (BE Participation) Diana Reinoso Botsho (Science for Change) Rasmus Slaattelid (University of Bergen)

Over the last decades we have witnessed a debate about changing ways of producing and circulating knowledge both diagnosing and calling for changing relations of science, society, politics, and innovation. Most recently in Europe, some of these debates emphasize the concept of responsible research and innovation (RRI).

In this paper we present a comparative analysis of three different RRI-pilots within the Horizon 2020-funded project TRANSFORM. In these pilots RRI takes the shape of citizen science projects, participatory agenda setting and (plans for a) citizen assembly. Thus, we see different translations of RRI steered by diverse actors.

We are interested in precisely these multiple territorial translations of RRI, the organizational and institutional orderings with which they co-emerge and in the challenges that come with these translations.
The concept of translation - brought into STS in the early years of ANT - has been used to tackle simplistic notions of technology transfer (Akrich, 1992) and to explore implementations of engagement activities (Soneryd and Amelung, 2016). framed as “technologies for elicitation” (Lezaun and Soneryd, 2007). The concept challenges essentialist and technocratic notions of engagement and instead directs attention the shifts in meaning of concepts like participation, citizen, or expertise, and to the making and re-making of links between different entities and agents. Such a relationalist understanding of RRI allows us to focus on how engagement and participation is practiced in the three different TRANSFORM pilots as a part of techno-political orderings and as such are enacted together with particular organizational settings and institutional repertoires, scientific knowledge claims, objects, issues at stake, subject positions and (collective) identities (Chilvers and Kearnes, 2015).

The analysis builds on material gathered in the project TRANSFORM and consists of interview data from semi-structured interviews, project documentation and relevant policy documents.

1051 BEYOND SOCIAL IMPACT OF ENERGY SYSTEMS : A CRITICAL REVIEW OF TWO FRENCH ENERGY PLANNING STUDIES

Soubra Baptiste (HT2S, Cnam) Bocquet Bertrand (HT2S, Cnam, Université de Lille)

Net zero greenhouse gas emission has been set as the goal to reach in 2050 in order to mitigate the effects of climate change. Each IPCC report reminds us of the important role that the transformation of energy systems shall play in this mitigation. Finally the cards we should play to sufficiently transform the energy systems in time are well known : reduce the use of fossil fuels, develop renewables and reduce the overall energy consumption. Thus the last question to answer to concerns the pathways societies should follow to meet such goals.

How does society address such questions ? A part of the answers is quantitative modelling, and simulating complex systems in order to build scenarios which aim to help policy makers and companies to make decisions. However one may ask to what extent the civil society can take part into such studies ? Or, if quantitative modelling is able to encompass complex socio-political issues to draw feasible scenarios ? This paper proposes a critical analysis of the energy planning approach through the scope of socio-technical systems and public participation. We analyses the methodology of two recently published French studies which both aim to contribute to public debate about energy transition : “Futurs énergétiques 2050” by RTE and “Transitions 2050” by ADEME.

This review emphasizes the predominance of techno-economical considerations versus social and political matters. This is a major weakness of such studies since they cannot guarantee whether or not scenarios are socially feasible or if they correspond to the interest of main actors. A comparison to existing socio-technical energy models and grounded approaches for implementation of socio-technical transitions allows us to draw area for improvement of energy planning methodologies in order to tackle this weakness. Finally, participation appears to help encompassing socio-political dimensions within scenarios.

Room N112 - Panel 033. FUTURES AND NARRATIVES IN HEALTH CARE POLITICS AND POLICY

Session 2

673 THE ILLUSION OF A COMPREHENSIVE FUTURE NARRATIVE: MOVING FROM MANUFACTURABILITY TO MODESTY

Teyler van Muijden (Erasmus School of Health Policy & Management) Violet Petit-Steeghs (Erasmus School of Health Policy & Management)

In Western politics, societal innovations are put forward as optimist future narratives to solve grand challenges. An example of such a challenge is the care for people with misunderstood behavior in the Netherlands. This group consists of different types of people and behaviors who in the current care system fall within two stools. Due to increasing social unrest about this mis-fit group, a national advisory team introduced a comprehensive strategy to solve the elusive issue of misunderstood behavior. The rationale behind this strategy was the future image of manufacturing civil society by delivering personalized services. In line with the current decentralizations of care, this unilateral narrative was implemented by regional politics, involving a great number of stakeholders from both the care, safety, and social domain, having different views and interests.

To investigate how regional stakeholders give shape and meaning to this narrative, we opted for a practice-based approach. Through qualitative methods – interviews and focus groups – we obtained insights into the narratives of professionals on the work floor, directors, and regional policy makers working in different domains.

The make-believe future of a comprehensive strategy helped national politics to motivate the regions to set-up cross-boundary collaborations to realize integrated and personalized care. Yet, it insinuated the problem was solvable. The comprehensive solution appeared, however, to be a mere illusion. The manufacturability turned out to be quixotic in practice and led to frustration and disappointment among regional stakeholders. Due to the multiplicity of the challenge, regional stakeholders developed different narratives, besides a personalized strategy. To give room for diverse and sometimes opposing narratives, grand challenges require a more reflexive and modest way of governance to reflect on existing narratives and temper unilateral interventionist aspirations.

667 ADJACENT POSSIBLES OF SOCIAL PHARMACEUTICAL INNOVATION

Tineke Kleinhout-Vliek (Copernicus Institute of Sustainable Development, Utrecht University) Wouter Boon (Copernicus Institute of Sustainable Development, Utrecht University) Rob Hagendijk (Copernicus Institute of Sustainable Development, Utrecht University) Jarno Hoekman (Copernicus Institute of Sustainable Development, Utrecht University) Ellen Moors (Copernicus Institute of Sustainable Development, Utrecht University)

Background – Many conceive of the rare disease field as an experimental space, where problems that characterise health care (like expensive medicines and differential access) play out earlier and at a smaller scale, and where, accordingly, innovative solutions may be road-tested. Many novel actor constellations involved in such road-testing explicitly aim for a higher societal goal. We describe these constellations as social pharmaceutical innovation (SPIN) and observe that they construct adjacent possibles: “alternative social arrangements just beyond the horizon of prevailing practice”.

Methods – We first conducted semi-structured interviews (n=30) with actors (working in policy-making or at payers, hospitals, patient organisations, or pharmaceutical companies) engaged in smaller and larger forms of SPIN in the Netherlands. We then convened a workshop with a subset of interviewees to 1) present our preliminary findings and 2) co-create alternative pharmaceutical innovation scenarios.
Results – We present an overview of Dutch SPINs investigated, including novel R&D partnerships, new forms of licencing and provision (e.g., magistral preparation), and alternative regulatory coverage arrangements (e.g., conditional reimbursement schemes). We distinguish SPINs by their conception of the current system, its boundaries, and its adjacent possible(s): on a smaller level (e.g., getting specific medicines to specific patients) or on a societal level (e.g., combating inequality in access), in technological and/or regulatory terms. Second, we show the alternative adjacent possibles generated through our co-creation workshop, showing the boundaries and connections constructed when actors involved in different SPINs convene.

Conclusion – Adjacent possibles, like all future visions, are highly political. We have intervened in the pharmaceutical innovation field by 1) identifying adjacent possibles currently in circulation and 2) facilitating the

generation of alternatives. We suggest further research into how bringing actors together around shared future social arrangements may facilitate social innovation in highly regulated and institutionalised fields.

723 IMAGINING THE FUTURE OF MENTAL HEALTH CARE IN/FROM URUGUAY

Santiago Navarro (Universidad de la República)

National and international diagnoses in the field of mental health care coincide on one point: we need more and better care services (WHO, 2019). However, when advancing in the characteristics that mental health care should have, intense public controversies emerge. In recent research in Uruguay we observed how, beyond these public discussions that emerge sporadically, in everyday practices different positions on some of the controversial mental health topics remain silenced without finding public spaces to be addressed collectively (Navarro, 2019). The PhD research project that we want to discuss, from a STS perspective, aims to explore the future scenarios of mental health care in Uruguay projected by its actors for the year 2050. It pretends to clarify the different positions around mental health care and to promote the construction of future scenarios that collaborate in the establishment of academic and political discussions. An exploratory scenario planning methodology is proposed (Stapleton, 2020), exploring the future perspectives of the actors involved in a given topic, not for predictive purposes but with the aim of opening debates based on the perspectives of the interested parties. Based on similar recent research (Priebe et al, 2019; Giacco et al, 2016) the field work is divided into three phases: 1) Surveys of the different actors; 2) In-depth interviews with renowned national academic and professional experts, and mental health users; 3) Open exchange instances based on preliminary results. It is expected to build future mental health scenarios that collaborate with academic and political discussions at a national level, analyzing the meanings and assumptions of each of them, and specially the role attributed to technology, institutions, professionals and patients. We believe that the discussion of the research project in its initial phase will collaborate significantly with the strengthening of its methodological aspects.

178‘ASK US!’: COUNTER NARRATIVES AND COLLECTIVE TINKERING IN LONG TERM CARE

Marjolijn Heerings (Erasmus School of Health Policy & Management) Hester van de Bovenkamp (Erasmus School of Health Policy & Management)

Narratives in which people with disabilities, serious mental illness or older persons have self-determination over their lives and care, live independently and are active in the community are dominant in governmental policies and innovation practices of healthcare organizations alike. Such innovation practices include participation of services users in developing goals for their personal care plan, developing independent living arrangements, and stimulating service users to become active in the community. These policy narratives and innovation initiatives cover-up the normative complexities inherent in care practices focusing on empowerment of service users. It is therefore important to foster collective tinkering. This way, these normative complexities can be better attended to in practice.

Collective tinkering requires infrastructures where service users, professionals and relatives alike are supported in developing counter narratives through which their needs and caring practices are explicated and taken-up to improve services. The ‘Ask Us!’ method provides such an infrastructure. This method includes several reflexive sessions where clients, professionals and informal carers develop themes for quality improvement and design such improvements together. These reflections are triggered by short videos of theatrical monologues. These monologues communicate the normative complexities, counter narratives of burdens and the invisible work of caring. The development of these videos involved several steps of translation following both a qualitative research logic and artistic logic. This however warrants careful reflection on validity and the ethics involved in re-telling the narratives of research participants.

We approach the ‘Ask Us!’ method both in practical terms as an infrastructure for narrative, critical and participatory quality improvement and as a mode of experimentation. Implementing and evaluating this method in different care organizations brings about reflections on, and tinkering with, care practices. This generates further insight into the normative complexities of care aimed at empowering services users and how these can be tinkered with collectively.

755 THE SOCIAL LIVES OF STORIES – THE ROLE(S) OF ACCOUNTS OF RARE DISEASE FROM INNOVATION TO AUTHORISATION AND MARKETING OF ORPHAN DRUGS

Eva Hilberg (University of Sheffield, UK) Tineke Kleinhout-Vliek (University of Utrecht) Hester van de Bovenkamp (Erasmus University Rotterdam)

Patients' stories are more than anecdotal evidence, and they travel in often unexpected ways. This paper argues that the telling and the sharing of stories can constitute an engagement of a different quality to statistical information, and traces their affective potential in different instances of patient engagement in the field of rare disease. Here, we rely on the notion of 'stories' to capture the expert labour that goes into defining, translating, and representing rare disease across different sites from research and innovation, to eventual authorisation and the marketing of orphan drugs. The central question of the paper focuses on the work that stories do in the space of rare disease, and how they can act as a source of complex interactions in and around patient participation. We argue that the notion of 'stories' can connect different elements of a 'patient journey' in a new and productive way, especially also by going beyond the immediate act of telling of the stories in different venues. This connection shows that individualised stories can also have a structuring, disciplining effect on interactions, creating for instance a model of a 'good' rare disease patient within individualised care practices, written into policy expectations, and influencing the very definition of a particular rare condition. Tracing these stories through decision-making processes concerning orphan drugs allows for reflection on the transcendental performative and affective elements contained in these interactions, and also on the potential limits of these performances in a very closely circumscribed and heavily regulated arena.

Room N114 - Panel 042. DATA, ALGORITHMS, ABSENCE AND ALTERITY

Francis Lee (Chalmers University of Technology)
Michela Cozza (Mälardalen University)

The ontological politics of our time seem to be increasingly tied to an algorithmic and datafied production of society and nature. Life is permeated by automated systems, learning machines, tracking devices, and sensors. But what is made as real is closely tied to what becomes made unreal—to what is excluded from thingness in practice.

In this open panel we want to explore the politics of absence and alterity in algorithmic and data practices. How are things made absent in practice? What happens to the objects that are not cared for? Things that do not become matters of concern? What hidden or ignored multiplicities are removed from enactment? And who can decide what is included in the present? In this panel we want to examine the practices and politics of what Lee (2021) has dubbed ontological overflows—how things are excluded from becoming matters of concern. These ontological overflows have great consequences: they decide what objects are not there, how things are removed from becoming real, as well as the boundaries of the objects that are made present.

Exploring how objects, phenomena, and people are unmade, excluded, and othered requires developing methodological and analytical sensibilities that allow for studying the above-mentioned practices and politics of othering. Such a move interpellates STS scholars regarding how to notice (Gherardi and Cozza, forthcoming) and trace not only data produced by algorithms but also those data that fall 'in between' and, most of the time, risk to remain unnoticed. In other words, the question becomes how to study how absences and alterities are generated in algorithmic and data practices.

This panel welcomes conceptual, theoretical, and methodological contributions that explore how ontological overflows are produced and handled in practice, as well as their effects on producing absences, alterities in algorithmic and data practices. The panel welcomes both conceptual papers and case studies that help develop our methodological and analytical sensibilities towards absence and alterity. We want to ask: How can we pay attention to ontological overflows? How can we understand how certain things don't get a grip on reality? How can we follow the things that are excluded?

Session 1

632 ONTOLOGICAL OVERFLOWS AND THE POLITICS OF ABSENCE

Francis Lee (Chalmers University of Technology)

This paper suggests that STS needs to start attending to what I dub ontological overflows. My argument is that the focus on construction and enactment stories in STS has led to us taking over the matters of concern of our interlocutors. Our informants' concerns and objects, becoming our concerns and objects. I argue that we have taken for granted which objects should be attended to, cared for, and analyzed. Thus, our theories and methods have constituted a particular blindness to those objects that our informants do not care for—the objects at the edges of the network, the smooth rhizomatic spaces, the blank figures, the neglected things, the undiscovered continents, the plasma. The paper thus joins in the ongoing discussion about otherness, perspectivalism, and ontological politics, and asks how STS can attend to the making of the absent, weak, and invisible. What would happen if we start paying attention to these ontological overflows in practice? By tracing how multiple absences are produced, the paper shows the usefulness of caring for the othered objects, of following the making of alterity and otherness. The argument is that the tracing of ontological overflows opens up for understanding how tangential objects are dis-assembled, and consequently for tracing how absence, alterity, and otherness is made in practice.

351 GROUND-TRUTHING EXCLUSIONS: ENFORCING A BENCHMARK FOR NEOANTIGEN PREDICTION IN PERSONALIZED IMMUNO-ONCOLOGY

Florian Jaton (Université de Lausanne)

This paper expands on a recent series of studies asserting that algorithms – be they associated with terms such as "big data," "machine learning," or "artificial intelligence" – fundamentally derive from benchmark databases, often called ground truths, that gather input data and output targets, thereby establishing what can (and should)

be retrieved computationally. The paper explores the case of the Tumor Neoantigen Selection Alliance, a consortium-based ground-truthing project in personalized immuno-oncology, where the "truth" of the targets to be retrieved by the would-be algorithms – immunogenic neoantigens – depended upon a broad technoscientific network whose setting up implied important organizational and material infrastructures. Moreover, while stabilizing a workable referent for algorithmic development, this collective, and well-funded, research endeavor also excluded divergent conceptions of immunogenic neoantigens, notably those that did not fit the project's initial pipeline and its heavy apparatus. More generally, this case study indicates that the enforcement of ground truths – and the many entities and conceptions that are bundled out of them – is a necessary condition to algorithm-enabled personalized medicine.

847 BLOOD DONATION'S 'MISSING MINORITIES': A COMPARATIVE ANALYSIS OF THE POLITICS OF ABSENCE BY BLOOD PROCUREMENT AGENCIES IN THE UK AND BELGIUM

Stephanie Hermant (UGent) Pierre Monforte (University of Leicester) Lesley Hustinx (Ugent)

This paper discusses the emergence of "Missing Minorities" in the blood field and related information and recruitment campaigns by blood procurement agencies in both the United Kingdom and Belgium. This paper asks wat is made im/possible by the production of absence within blood procurement. Particular consideration is given to the production of absence through strategies of silencing, exclusion and naturalization. To explore this, the presence and absence of minority ethnic communities in discourses and representations surrounding blood procurement are traced. This is done by analyzing the public webpages and brochures of two blood procurement agencies, located in two different national settings, and representative of two different blood collection regimes (e.g. state and red cross). More specifically, this paper develops a case-study from the observation that NHS blood and transplant started an outreach campaign, targeting minority ethnic communities. While Red Cross Flanders does not address this problem publicly. Resulting in an absence of campaigns, controversy and data to be collected. The aims of this paper are both methodological and theoretical. First, this paper proposes a comparative analysis of absence and presence as a methodological intervention to trace how absence is made in practice. Second, this paper theorizes how to understand the politics of absence in the blood field by drawing on conceptualizations of Law, Derrida and de Sousa Santos.

808 NEGATIVE SPACE: PATHWAYS TO ABSENCE IN PHOTOGRAPHISH EVIDENCE

Alison Gerber (Lund University)

Decades of research on scientific representations have offered rich empirical and conceptual perspectives on the ways that particular representational practices allow us to know the things that we know. But new visualization technologies present new kinds of problems; further, data visualization practices oriented toward theorizing, ideation, and argument are less well understood than those that aim to represent empirical knowledge. With data from a multisited ethnographic study focused on sensor-based photographish visualizations as evidence between science and the law, this paper begins by outlining four pathways to absence that are common across my field sites. I show how a multisited ethnographic approach and a relational object of inquiry can surface what otherwise would be made absent, invisible, or indeterminate. Then, with attention to processes of data capture, cleaning, management, and removal, I show how and when analysts' commitments to truth and clarity in the production of visualizations are made irreconcilable, and illuminate the patterned ways that absences emerge through visualizations for inquiry, communication, and convincement.

258 OVERFLOWING CITIES AND THE TECHNOPOLITICS OF RECOGNIZING WASTE

Kevin Pijpers (University of Twente Department of Psychology, Health and Technology)

Waste is overflowing the city. It is both process and result of the political economy of growth, disrupting ecosystems (D'Alisa, Demaria, and Kallis 2015). The endless accumulation of waste has well been called the porous foundation of contemporary human consumption society (Sayers 1947). Thompson's (1979) rubbish theory points to the ambiguousness of waste in-between transient and durable. In the time of plastic polymers, waste is surrounded by politics of alterity and plasticity: othered as not-ours, externalized, recyclable, mere form without content, no-thing.

Public management in the city of Rotterdam has been developing image recognition technologies to map waste and dam the symptoms of this still growing problem. Cameras mounted on cars send images of urban spaces back to algorithms, which in turn knot together some spaces of waste, including humans, buildings, cigarette

butts, trees, bin bags, …, in neat data tables; all the while charting history upon pristine and user-friendly dashboards. How are spaces of waste produced, and how are wasted spaces? What is excluded from the clean, datafied city? How does waste resist these politics of purification?

Methodologically, urban waste is overflowing the human/actor paradigm. Camera vehicles investigating 'hot spots' of urban waste follow the gaze of the interlocutors – civil servants, citizens, and algorithms – themselves part of the politics of presencing and absencing. As the traditional STS methodology of following the actors has perhaps become a "methodological reflex" (Lee 2021), we note that waste itself has a tangential kind of agency. This paper, drawing on our organizational ethnography of the development of image recognition technologies at the municipality of Rotterdam, draws attention to the "ontological overflows" (Lee 2021) of more-than-human technologies of sight.

1020 LANGUAGE/COMMUNICATION IDEOLOGIES AND DIGITAL CULTURE

Alicia Fuentes Calle (member of SATSU, University of York)

Natural Language Processing is mainly perceived as the operational side of a neutral/universal way of representing/experiencing human language. It may be best understood, however, as the byproduct of a particular approach to language/communication (linguistic ideology) whose genesis can be traced, and that has led to a particular view of the 'science of language' and its correlated technologies. As such (as a local story succeeding as a global design, to put it in Walter Mignolo's terms), it is designing our contemporary algorithmic and datafied communication culture through a structural bias, unaffected by the deep cultural conceptions of language/communication as intersubjective (and proto-aesthetic) phenomena. This presentation will focus on a particular case. How the decades-long efforts aiming at world linguistic diversity preservation and revitalisation, by focusing these days on strategies mainly involving AI and Big Data grounded on that logic, may create a mere illusion of ontological preservation – Since that linguistic heritage (including a diversity not just of codes, but of communication ideologies and their associated notions/experiences of the human/subject/person) is filtered via a system based on a particular linguistic/communication ideology. That preservation programme would eventually result in the mere preservation of the 'code part' of that linguistic heritage, i.e. the only part included and made visible, readable, by that logic. The diversity of human representations and experiences of language/communication (and associated interactional worlds) is therefore potentially excluded through the "inclusion" of that plural heritage via the extreme version of a linguistic ideology. This may potentially entail a critical dimension of what we could call an "endangered poetics of the human". Examples will be drawn from programmes undertaken by international organisations dealing with the 'digital preservation' of linguistic diversity, mainly in the orbit of the United Nations International Decade for Indigenous Languages 2022-32.

Room N110 - Panel 047. MAKING LIVEABLE WORLDS THROUGH REFLEXIVE METHODS: CARE AND INTERVENTION IN STS RESEARCH

Session 2

511 DISEMBODIED SELF: STAGING THE TROUBLE THROUGH CAREFUL BODILY ENGAGEMENTS

Pierre Delvenne (University of Liège)

Based on a project on stem cell therapy, I scrutinize how biological materials are extracted from bodies and put into circulation, and how this creates openings for 'doing' reflexive STS research. I draw on (auto-)ethnographic fieldwork conducted in a pre-clinical stage biotech company that uses a patented technology to obtain multipotent adult mesenchymal stem cells from a minimally invasive muscle micro-biopsy. First active in equine medicine, this company is now also developing in human medicine using the same technology. Hence, apart from a few minor technical adjustments, animal and human cells follow exactly the same path, from extraction, to collection, transport, culture, and cryopreservation. After observing this process repeatedly in horses and humans and following the cells in motion, I volunteered to experiment with it myself by donating a muscle sample from my thigh for R&D purposes, with the aim of moving from participant-observer to observer-participant (and back again) (Seim 2021). This gift was not only motivated by an altruistic purpose (helping the people who facilitated my access to the field), but by the more selfish desire to use this personal detachment as a device of reflexivity generating more care and engagement in the future of fragile living entities. By temporarily transforming myself into a clinical subject, I not only helped to prevent the anonymity of donation, I also troubled the bodily engagement and attachment of biomedical scientists to their 'objects' (Myers 2008). What difference does it make whether the donor is an animal or a human being (and to whom)? And what if that human being is me? Initially considered as an anecdotal reflexivity experience, this paper questions the collaboration of various actors – human and non-human – in the development of medical therapies and highlights how such a process inevitably transforms entangled beings (Puig de la Bellacasa 2011).

955 LIFE-LINES: A VISUAL BIO-ETHNOGRAPHY OF BREAKTHROUGH COVID AND ECOLOGIES OF SUPPORT AS SHARED IMMUNITIES

Angela Marques Filipe (McGill University and University of Edinburgh)

Living on the line is an apt metaphor for the ways in which we observed, moved, and interacted along an unexpected set of lines and boundaries during the Covid-19 pandemic. From epidemiological charts and curves and the stripes of positive LFTs, to border restrictions and quarantine/isolation mandates, to networks of communication and support that marked everyday living throughout this period. Taken in their full vital and material-semiotic sense, the lifeline evokes the image of something (or someone) that one relies upon to escape a difficult situation. Yet they also reflect a particular set of pandemic life-lines that Donna Haraway, Emily Martin, and Roberto Esposito associated with the logic of immunity: that which protects an organism-system from danger, such as a viral threat, particularly by demarcating the self/body from non-self/other foreign bodies. In this paper, I explore my experiences of testing for and isolating with Covid in late 2021, blurring the lines of my "fully immunized" status and those of "herd immunity" as I was situated in my home-country and the most highly vaccinated in the world at the time. Drawing on notes, vignettes, and portraiture and inspired by anthropological and feminist STS literature, my exploration has two main aims. The first is to explore how this conjunction of events brought the concepts and logics of immunity under an unexpected reflexive light that was, at once, biographical, embodied and relationally experienced. The second is to explore how these experiences and reflections were embedded in—and revealing of—–ecologies of care, support, and solidarity that made life more liveable and that I reconceptualize here as situated lines of immunity. To meet these aims, I devised a novel methodology that I term visual bio-ethnography combining visual analysis and auto-ethnography with an extended version of what Liz Roberts called bioethnography.

100 THIRD SPACE WALKS. FL&ACIRC;NEUSE* IN VIRTUAL AND MATERIAL SPACES OF CITIES

Mirjana Mitrovic (Berlin University of the Arts)

The interaction between technologies and societies shape everyday life in urban spaces as the boundaries between virtual and analog worlds seem to dissolve. A new hybrid space, characterized by mobility and constant

networking, has emerged. Still, this space is often thought in dichotomies such as online and offline, which diminish our understanding of cultural and social changes in today's cities. This paper shows how concepts like "hybridity" applied by Haraway and "Third Space" according to Bhabha create a possibility to overcome these separate imaginations as these concepts work beyond dichotomies and instead bring the newly emerging space into focus. Thinking virtual and physical spaces together permits a new perspective to understand, influence and debate current and future dynamics of digitalization. To walk this new space, this paper presents a new method of flanerie, based on Walter Benjamin, but including feminist, intersectional and postcolonial perspectives. This method understands flanerie not only as walking, but also as collecting impressions and presenting – even if perhaps fragmented – conclusions. Applied by various persons in Berlin and Mexico City whom are not included in the prevalent image of the flaneur as a white man, this method challenges the status quo of how and by whom academic knowledge is created and represented. Practicing flanerie with the awareness of moving in a third space makes it possible to walk, while also resisting predetermined logics such as algorithms. It is thereby a walk "off the grid". Through this method and the focus on the trinity of digital technologies, bodies and spaces, the third space and its current formations of mobile socialities can be analyzed.

56 CARING WITH AND THROUGH DECEPTION

Brian Rappert (University of Exeter)

Aligned with the panel call, this presentation examines a set of possibilities for how reflexive relations can 'perform themselves into the material world' (Law & Lin 2020) through reference to practices of care and deception. It does so through recounting my autoethnographic efforts over recent years associated with learning and performing entertainment magic. As a way of suggesting possibilities for being and doing in the world, the presentation outlines the overall rationale and structure that emerged for my public performances of magic; performances in which I use magic as a research method for promoting public dialogue about socio-technical interactions, the constitution of secrecy, and related topics. As elaborated, my overall strategy for performances has been to make our often unexamined socio-technical practices and conventions into explicit topics for joint discussion. Rather than affectively sweeping audiences away, my goal became one of finding ways to bring them back to the wonder of how we interact together; to the alluring power that gets invested in secrets; to how we make perceptual sense of the world with one another, and so on. This is done through offering effects, verbal patter and questioning that take as their topics our very interactions together there and then – in other words through enacting reflexivity. In making these arguments about my approach, I will also advance a more general one about how a deceptive undertaking such as magic can be understood as a reciprocal form of interaction that involves an interdependency between care, control and cooperation.

Room N108 - Panel 055. INFERENCE WORLDS: POLITICS OF MACHINE LEARNING FUTURES

Louise Amoore (Durham University, UK)
Nanna Bonde Thylstrup (Copenhagen Business School, Denmark)
Benjamin Jacobsen (Durham University, UK)

The advent of deep neural network algorithms has significant implications for how futures are imagined and politically governed. As algorithmic models gain capacity to generate and infer rules from the examples in data, machine learning appears to hold the promise of making inductive and inferential forms of knowing, classifying, and deciding. A machine learning political future does not merely change the political technologies for governing state and society, but is itself a reordering of that politics, of what the future could be. What happens, for example, to ideas of political community as a grouping or gathering of people when they become reconstituted as a grouping or clustering of machine-generated features? What does it mean to infer the attributes of a cluster, and how are categories of race, gender, class, or sexuality understood differently as attributes? What is at stake for politics itself to be rendered a problem of the design of a model, where every potential future is arrangeable as a machine learning problem?

The panel will investigate how machine learning generates inferential models of the future, and discuss how inferred futures (e.g. a person's score within an immigration algorithm, or an individual's propensity to respond to a specific drug treatment) embrace non-linear and emergent logics. Among the themes are:

• The political foreclosures and openings of machine learning technologies: How do the architectures of deep learning produce representations of the world? Are some political pathways and possibilities foreclosed by the iterative and inductive inference from a data scene? What is the scope for refusal or resistance to the closing down of political futures?
• Historical genealogies of the politics of machine learning: What kind of political world making is specific to the deep learning of our times? How are past forms of probabilistic and statistical inference reconfigured with the experimental and inductive methods of deep learning?
• Infrastructures of inference: What are the infrastructural arrangements of deep learning algorithms, and what kinds of political conditions do these arrangements instantiate? From hardware and software to datasets and repositories, and from cloud to edge – how do some potential futures emerge into sight whilst others are foreclosed?
• Ethics of machine learning futures: How are apparently settled political categories – 'democracy', 'state', 'border/boundary', 'group', 'order/disorder', among others – destabilised by machine learning imaginaries? What are the ethico-political implications of novel techniques of classification and dividing?
• Domains of machine learning futures: What does it mean for a natural language processing method to be 'language agnostic'? How do the specificities of domains of expertise change through the introduction and use of pre-trained models and transfer learning?

Session 1

19 CODE, CONCRETE AND CULTURE: MACHINE LEARNING, AUTONOMOUS VEHICLES AND THE RULES OF THE ROAD

Jack Stilgoe (UCL)

Behaviour on the road is ordered by a range of norms, rules, laws, and infrastructures. The introduction of self-driving vehicles, controlled by systems that involve machine learning, onto the road opens a debate about the rules that should govern their actions and how these should be integrated with, or lead to the modification of, existing road rules. In this paper, we analyse the current rules of the road, with a particular focus on the UK's Highway Code, in order to inform future rulemaking. We consider the full range of laws, norms, infrastructures, and technologies that govern interactions on the road and where these came from. The rules have a long history and they contribute to a social order that privileges some modes of mobility over others, reinforcing a culture of automobility that shapes lives, livelihoods and places. The introduction of self-driving vehicles, and the digital code on which they depend, could reorder the culture and concrete of our roads, by flattening the multidimensional rules of the road, hardening rules that are currently soft and standardising across diverse contexts.

82 FROM ETHICAL TO OPTIMAL: TRANSFORMATIONS IN THE ETHICS OF AUTONOMOUS DRIVING DISCOURSE.

Maya Indira Ganesh (University of Cambridge)

This paper traces the implications of transformations in the 'ethics of autonomous driving'; chiefly, the stakes for human social relations, public space, and bodies through changes in how automated decision-making technologies are framed as 'ethical'. Initially, thought experiments such as the Trolley Problem foregrounded Machine Ethics: how computational architectures might be a site of ethics-as-input and as-output. This surfaced concerns about varieties of ethical agents, of ethics as ontological, and decision-making as acquired by the machine. The Moral Machine project however introduced a shift towards ethical decision-making as statistical risk calculation. Where Machine Ethicists stop at identifying the kinds of possible architectures for 'accountable' computational decision-making and their implications, the Moral Machine goes a step further. It transforms the ethical into the optimal. As such, accountability turns on logics of statistically-driven risk management. Rather than identifying one or other approaches as right or wrong, this paper identifies the implications of modes of 'algorithmic governmentality' that re-organise the world around the car.

Largely absent of culture and history, the driverless car as a technological innovation has been instrumentally shaped in terms of speculative metrics of risk, time, and accuracy made up by engineers, behavioural economists, and management consultants. By contrast, this paper is drawn from multi-year research that frames the driverless car as multiple: as imaginary, infrastructure, and as twentieth century media -the car. This fragmentation works as a methodological approach for a close critical study of the social, cultural, and political implications of how algorithmic and machine technologies operate at scale.

This paper draws from approaches developed by Louise Amoore and Ramon Amaro to conclude that ethics in or of algorithmic technologies cannot come from within, but must originate prior to or outside of the algorithmic. This transformation is essential for a re-framing of what future 'driverless-ness' might be.

460 LOSS: NOTES ON THE CONCEPT OF ERROR IN MACHINE LEARNING

Alexander Campolo (Durham University, ALGOSOC)

Consider a typical presentation of a deep neural network. At its heart is a loss function, which measures how well the network maps inputs to outputs. Loss is gradually minimized, used "as a feedback signal" to adjust the weights of the network to produce better representations of the underlying data structure. Inference becomes a straightforward matter of minimising error. Better prediction means better inference—right? As is often the case in statistics and probability, deep conceptual issues lie beneath calm positivist surfaces. What does it mean to speak of inference in terms of classification? Is inference meaningful when we give up causal accounts, as neural networks demand of us?

The genealogy of a statistical notion of error sheds light on these puzzles. In the eighteenth and nineteenth centuries, error took on a new positive role. If one knew something about how erroneous observations were distributed, one could infer the true value of the object being measured. Instead of leading away from truth, error led towards it. Soon, "the law of error" expanded into a political, even metaphysical principal, unifying the most diverse groups of individuals as types: a race, a nation, or a class…

Where once error led to truth, now it seems to lead at best to an action, even more narrowly, a classification--always under conditions of uncertainty. This paper argues that a new understanding of error emerged in the middle of the twentieth century, when statistics was transformed as it came into close contact with wartime imperatives and new theories of human rationality. The movement from "error" to "loss" allows us to understand some of machine learning's antipathy for theory, causal reasoning, and perhaps even truth. While this transformation might be liberating in some ways, it also unleashes new forms of classification and rationalization, unencumbered by older epistemological safeguards.

849 CONSTRUCTING CERTAINTY: THE PERFORMATIVITY OF BENCHMARKING AND ITS HOLD ON THE FUTURE

Gabriel Grill (University of Michigan)

The capabilities of machine learning algorithms are often also understood through testing, benchmarking, and the calculation of standardized performance measures like accuracy. For example, IBM has advertised its algorithms as being able to predict the future performance of workers with 96% accuracy and when workers will quit with 95% accuracy (Christl, 2021; Rosenbaum, 2019). Such performance numbers are often used to make sense of the functioning of algorithmic systems and promise to quantify uncertainties in algorithmic predictions by highlighting the expected frequency of correct and wrong results. They also are performative and involved in

producing ascriptions of certainty towards predictions. Consequently, these measures can be understood also as rhetorical devices meant to convince others of the ability of algorithms to know the future through the trust in numbers and thereby make a calculated vision of the future appear certain. This marks others as unlikely, foreclosing possibilities for different futures. Building on work in the sociology of testing and agnotology, I aim to show how the construction of accuracy and related imaginaries of certainty, also involves the production of ignorance. This ignorance should be understood as productive as it also contributes to increasing accuracy numbers and thereby makes it possible to claim high accuracy and certainty. I discuss practices in machine learning and how they introduce certain forms of ignorance that make the construction of high accuracy in classification algorithms possible. This move aims to deconstruct claims to certainty by highlighting the politics and contingencies of benchmarking used to justify the adoption of algorithms. Finally, I will reflect on how testing and the quantification of accuracy in classification algorithms could be rethought with the goal of opening possibilities, making contingencies more visible, and enabling the imagination of different futures.

687 INFERRED FUTURES OF A DONOR ORGAN

Louise Amoore (Durham University, UK)

A computer scientist turns to the surgical registrar who is seated beside him at the table, and he begins to express the difficulties he is encountering in building a model. "It is going okay", he reflects, "we think that we can use transfer learning, but we are going to need more images of organs, and that is a problem". The clinical team of organ transplantation specialists are working with the computer scientists on an experimental deep neural network. If the deep learning algorithm can predict the likely potential future of a marginal donor pancreas - an organ that may be otherwise rejected by the tacit judgement of a human surgeon - then the "good prediction" of the neural net might be made to align with the very idea of a good and hopeful future for the recipient of the organ. How do machine learning predictions differently generate inferences from data? What is the relationship between prediction, inference, and the uncertain pathways of potential futures? The paper brings together two sets of enmeshed ethics-political narratives. The first involves the marginal decisions of computer scientists building a model optimised for organ transplantation decisions: how the model will learn its weights, what do do about the scarcity of classified organ images, how to deal with overfitting. The second foregrounds the acute marginal decisions of the transplantation team and how the profound uncertainty of outcomes is expressed. What are the consequences of the inference world of machine learning - and its assumptions and propositions about predicted futures - becoming enmeshed with the ethics-politics of the uncertain and fragile future of a donor pancreas?

Room N111 - Panel 057. DATAFICATION GOES MATERIAL: DIGITAL CAPITALISM AND THE MATERIAL CONDITIONS OF EXISTENCE

Yana Boeva (University of Stuttgart)
Kathrin Braun (University of Stuttgart)
Mascha Gugganig (University of Ottawa)
Cordula Kropp (University of Stuttgart)

Datafication has been identified as a defining feature of contemporary capitalism. Scholarship in critical data studies, STS, social theory and political economy has interrogated the dynamics of datafication processes in light of a larger sociotechnical and techno-economic reconfiguration of capitalism, captured by concepts such as platformisation, financialisation and assetisation (Birch and Muniesa 2020; Burrell and Fourcade 2021; Fourcade and Healy 2017; Sadowski 2019; Srnicek 2017). From a perspective of digital capitalism, the “data imperative” (Fourcade and Healy 2017), datafication and the according data-driven forms of re-organising social life are based on forms of data extraction that amount to new forms of appropriation and dispossession through digital enclosure (Cohen 2019; Sadowski 2019) or data colonialism (Couldry and Mejias 2019).

The first analyses on these matters primarily focused on digital service platforms that generate revenue from different personal and interaction data that enables monitoring, assessing, predicting and manipulating social actions. In short, the discussion has focused on data about social life and resulting questions of privacy, confidentiality, bias and data sovereignty
.
More recently, however, the logic of capitalist datafication or datafied capitalism is expanding beyond the realm of services and behavioural data. Datafication increasingly permeates and enrols the material world—the world of things, of physical matter, or, in Marxian terms, the modes of production of material life and the material conditions of existence. We can see this expansion already in the fields of agriculture, forestry, medicine, and building construction (Braun et al. under review; Gabrys 2020; Gugganig and Bronson forthcoming; Kuch et al. 2020), others are likely to follow. The increasing integration of technologies (such as sensors, cloud computing, virtual reality, AI and robotics) enables systems for data gathering, data-generating and data-processing directed at the re-production, transformation and incorporation of not only human behaviour, but also buildings, cities, streets, plants, forests, and bodies in a very material sense. Buildings, streets, plants and bodies simultaneously become data and the product of data deployed to increase efficiency and control. Concurrently, the material preconditions of datafication – the need for rare earth minerals, energy resources, telecommunication infrastructures, but also cheap labour – demand closer attention (Cobby 2020). These datafied modes of production raise new questions:
• What are the material preconditions of datafication processes, and do they differ between classic services and more material worlds?
• Who or what owns and controls these means of production? Who owns this kind of data? And who is probably dispossessed?
• What are the institutional frameworks and infrastructures shaping this transformation?
• What would be forms of resistance and collective action?
• Can we conceive of material data-based modes of production that are not owned and controlled by states or corporations?
• What do appropriation, colonialism or dispossession mean in this context? Who are the actors?
• How does it affect the planetary material conditions of existence? How does it transform what is being built, what is being grown, what medical treatment is, how does it affect our lives and living conditions materially?
We welcome submissions addressing these questions but are not limited to them.

Session 1

865 MAPPING THE DATAFICATION OF U.S. HEALTHCARE: A COMPARATIVE TOPOGRAPHIES APPROACH TO THE STUDY OF DATAFICATION

Linda Huber (University of Michigan)

The healthcare industry in the U.S. is actively reorganizing itself around the “data imperative” (Fourcade & Healy, 2017), providing a new direction and momentum for an entire network of diverse infrastructures, practices, and subjectivities. Drawing from ongoing ethnographic research on the platformization of healthcare in the United States, I sketch out a broad overview of this actor-network in motion as it undergoes datafication. I identify and describe some key “hot spots” around the datafication of healthcare, including: technical and material interventions like remote patient monitoring sensors and data-interoperability standards; the re-organization of

divisions of labor, including the labor of patients themselves; and development of new kinds of collaborations, competitions, and dependencies among institutions and organization in the field.

This industry-wide map of datafication is meant to provoke comparisons across other networks of datafication. How does the "topography" of U.S. healthcare datafication compare to the datafication happening in other non-'digitally native' industries, or core public infrastructures? While we have a general sense of the datafication "playbook", what do we learn by comparing the frictions and patchiness (Tsing, 2004; Tsing, 2015) of actually existing topographies of datafication?

One particular dimension of interest for this "comparative topographical approach" is the role that Big Tech companies (e.g. Facebook, Amazon, Microsoft, Google) play within industries undergoing datafication. For which elements of the datafied network do Big Tech companies operate as "obligatory passage points" (Callon, 1986), and which remain under the control of incumbent infrastructural powers? This presentation will specifically delve into the role that Big Tech companies are playing in the datafication of U.S. healthcare in order to elicit further comparative discussion, and to better understand the ecological (van Dijck, Nieborg & Poell, 2019) and infrastructural power (Plantin, et. al, 2018) of Big Tech companies within processes of datafication.

97 BUILDING INFORMATION DATA AND THE EMERGENCE OF PLATFORM URBANISM

Kathrin Braun (University of Stuttgart) Cordula Kropp (University of Stuttgart) Yana Boeva (University of Stuttgart)

Digitally mediated forms of spatial production are about to transform the worlds of architecture and urban design. Once one-off projects, buildings have turned into products that can, in principle, be planned, stored, variegated, recombined, and reiterated time and again and cities, too, are assuming a two-fold existence in the physical and in the virtual world. While Henri Lefebvre (1991) described the social production of space as emerging from a triad of spatial practices, socio-political concepts, and utopian visions, materializing in buildings, streets, and cities, always shaped by differentials of agency and power, this triad is now increasingly absorbed by data-driven strategies and patterns of platform urbanism that reconfigure the agency of city dwellers as well as urban infrastructures and the socio-material reality of the built environment. In this paper, we consider the emergence of echo chambers of digitally conceived and perceived cities that could lead to an era of platform urbanism driven by large technology companies.
To decode these patterns and strategies, we draw on empirical material from in-depth interviews with architecture, engineering and construction professionals in Germany, carried out in 2019 and 2020, along with document analysis and the literatures on platform capitalism and the digital transformation of architecture and urban planning. We first sketch out the conditions of urban design in times of techno-utopian narratives and "corporate sociotechnical imaginaries" (Hockenhull/Cohn 2021) translated into platform urbanism. Next, we draw on critical political-economic analyses of platform capitalism and indicate how these are reconfiguring actor and power relations in architecture and construction. We then describe how data-driven forms of spatial production are propelled by technology providers and software vendors and, if unwillingly, by government policies promoting the adoption of building information modelling (BIM).

605 PROMISES OF 5G NETWORKS: DATAFICATION BY SOFTWARE-ORIENTED INFRASTRUCTURE

Tournier Adrien (CNAM)

5G telecommunications networks relies on a new technical architecture, the generalization of Software Defined Networking (SDN) and a dynamic combination of Edge and Cloud-computing. Whole telecommunications infrastructure might become software-oriented, so that 5G networks will be remotely configurable, continuously updated, and algorithmically optimized. In 5G, capture of data plays an inherent role in the material infrastructure of mobile networks, at all levels (physical layer and upper abstract ones) and for connecting a multiplicity of things, people, sensors, etc. The infrastructure of internet connectivity is simultaneously driven by data and fueled by data - data of different types. In this perspective, 5G expands data extraction through web plateforms architecture, but also transforms valuation devices within mobile networks infrastructures. Following the turn to infrastructure in internet governance, mobilizing infrastructure studies and STS methodological framework, this paper examines some key aspects of the conception and standardization process of 5G (through technical recommendation and specifications about 5G, related standards and technologies by major actors of this process). Surveying also some deployment case studies, it interrogates how 5G changes the material preconditions of datafication and the power by and over mobile networks architectures, bringing up the need to study the types of data architecture involved in mobile networks extending use cases. We suggest that why and for whom, even in user-centic approach, 5G networks are optimized merits investigation.

The major platforms already offer a large part of 5G infrastructure, becoming essential as infrastructural services and investing new sectors. In that context, telecommunications operators fear or rather anticipate that software will eat everything, disbanding their powers over mobile internet. We will discuss intermediary findings in our on-going research regarding those current issues, contributing to the studies of plateformization as an evolving dynamic process.

484 UNRULY MATTER: TAMING THE MATERIAL WORLD FOR DIGITAL VENTURE CAPITALISM

Jamie Wong (Massachusetts Institute of Technology)

As a model of investment, venture capitalism (VC) is closely interdependent with the rapid development cycles and scaling potential of digital technologies. But what happens when it sets its sights on the material conditions of sociotechnical systems? To explore this question, I draw on my ethnographic research with a Chinese branch of a U.S. VC firm. Strategically located in the manufacturing center of Shenzhen, this self-characterized “hardware accelerator” seeks to rapidly scale hardware startups on the model of software startups. By focusing on moments of friction and breakdown between investors and startup founders, and between their cultural expectations and material constraints in the processes of scaling hardware companies, I demonstrate how VC’s institutional framework of valuation (Antal et al. 2015), assetization (Birch and Muniesa 2020), and commensuration (MacKenzie 2009; Espeland and Stevens 1999) bear on our ontological and practical relationship with the material world (Gabrys 2020). Furthermore, I explore how this ontology — where the material world is expected to be as infinitely replicable as a digital one –– make explicit the limitations and (scalar) inconsistencies of the notion of a market “equilibrium” (cf. Mirowski 1991), and how it functions as a legitimizing concept for moral convenience. Lastly, I show how the VC model perpetuates and extends digital enclosure (Sadowski 2019; Burrell and Fourcade 2020) and “data imperative” (Fourcade and Healy 2017) by demonstrating how when these hardware companies do not develop in line with the temporal pace and regimes of digital startups, they look to generate and “assetize” (Birch and Muniesa 2020) data through their hardware products in order to keep the companies afloat.

Room N116 - Panel 068. DEBATING THE HERMENEUTIC CRITIQUE OF TECHNOSCIENTIFIC FUTURES

Martin Sand (Delft University of Technology, Department of Values, Technology and Innovation)
Alfred Nordmann (TU Darmstadt, Institut für Philosophie)
Armin Grunwald (Karlsruhe Institute of Technology, Institute for Technology Assessment and Systems Analysis)

A discussion about Politics of Technoscientific Futures must commence by critically asking why and how public discourse refers to technoscience futures at all and whether technoscientific governance can do without such reference. These questions have been taken up by a hermeneutic approach to technology assessment (TA) and the various attempts to conceive the future as an object (of design, of technical, intellectual and political control): In the last decades, it has been shown that thinking about the future has been reduced to thinking about technology, and inversely, that technology is the answer to the global challenges for the future. For better and worse, the future is presently conceived and imagined largely in relation to science and technology. Furthermore, the most prominent views on those technoscientific futures are elitist; they are conceived by a small fraction of people whose values are expressed in them. Another characteristic of this discourse is the inability, impossibility, or unwillingness to distinguish the perfectly sensible method of extrapolating the present („where are we heading?“) and the perfectly sensible interest to posit a vision of the good life („how shall we live?“) from the almost unintelligible project of anticipating the effects of radical transformation („how will it be once a radically new future world has been created?“). In pursuit of a hermeneutic critique of technoscientific futures, our panel will discuss the roots of conflating these different questions and the normative and political implications of their elitism and focus on science and technology.

• The future exists only aspirationally as a powerful image of another world, but it is nevertheless taken as a given object of planning and prediction, design and contemplation.
• Consequentialism is only one approach to ethics, and yet it is predominant in technology assessment and public discourse - even though the consequences in question are hypothetical at best. In contrast, a virtue ethics of technological research programs would engage with presently operative value commitments.
• The art of anticipation involves a sensitivity for what can happen in the world as one knows it, and yet there is a demand for anticipation of what can happen in a world that is decisively different from the known world because it has been radically transformed through technological innovation.
The proposed panel will explore this predicament and strategies for dealing with it. It thereby probes the limits of the hermeneutic approach by asking the following questions and more: 1) Is a hermeneutic approach to technoscientific futures dedicated merely to self-understanding through discourse analysis or does it have normative dimensions which afford a critical assessment of emerging technologies? 2) Is it addressed only to texts or does it involve a hermeneutics of technological systems and technical practice? 3) Can it serve as a corrective to the misplaced ambition of taking the future as an object of design or control, or does it provide a humanities perspective as a methodological complement in the toolset for shaping or modulating the future? 4) If hermeneutics can help us understand and criticize an elitist sociotechnical orientation of discourse, can it also be productive for fostering and strengthening alternative imaginaries?

Session 1

716 ARGUMENTS FOR HERMENEUTIC TECHNOLOGY ASSESSMENT

Arthur Wei-Kang Liu (TU Darmstadt)

At least since the publication of Amato’s infamous report "Nanotechnology: Shaping he World Atom by Atom" (1999), it has become clear that visions of so called ‘emerging technologies’ and their implied promises for the future do, indeed, influence policy makers and public decisions. Newer examples are synthetic biology, artificial intelligence, or even Elon Musk’s Neuralink. It seems as if the future is inseparably connected to the development of technology. This link is formidably shown in the expression of the Collingridge dilemma, which poses a challenge for the mastery of ‘emerging technologies’ with regard to their promises for the future. In the context of nanoethics and human enhancement, Nordmann and Grunwald began discussing the usefulness of valuing technological visions but soon moved on to a critique of the notion of 'the' future, which led to the call for a new mode of TA: hermeneutic TA. By identifying the discussion’s main arguments and proposals, I want to highlight the importance of those arguments for today’s debates on visions of technology, outline the (future) possibilities of a hermeneutic TA and argue why hermeneutic TA is a necessary complement for ‘traditional’ TA in order to enhance democratic participation and processes.

352 THE PROPECTIVE ROLE OF THE RESEARCH VALUE 'OPENNESS' IN THE SCIENCES

Rene Von schomberg (RWTH Aachen University)

The research value ‘openness’ can be seen as a constitutional value for the scientific community as such. Open scientific discourse, the exchange of ideas and competing approaches is fundamental for the progress of modern science. ‘Openness’ is presupposed by the Mertonian norm ‘Communism’ (common ownership of scientific discoveries) and thus part of the ethos of science (Merton, 1942). However, the meaning of ‘openness’ is manifold and is dependent on the scientific discipline or the scientific mission in which it is embedded. Open research and scholarship manifest itself notably in the case of interdisciplinary scientific cooperation with a view on developing a socially desirable output as the case of Covid-19 demonstrated. Open research and scholarship have been incentivized with a view of making science more efficient (better sharing of resources), more reliable (better verification of research data) and making it more productive with a view on a socially desirable output (in this case a vaccine). I will present an analysis to what extent ‘openness’ is part of a particular research culture and what it would require from that research culture to become productive in the context of a research mission in open science mode. This articulates the relevance of hermeneutics, as openness is both a traditional value and one which evolves in new research contexts. Hence openness has to be reinterpreted over time and for emerging research fields and new contexts. This has consequences as well for a research assessment.

256 HARVESTING THE FUTURE. PHILOSOPHY OF TECHNOLOGY AFTER THE POSTHISTOIRE

Daniel-Pascal Zorn (TU Braunschweig, Institut für Philosophie)

In my contribution, I would like to discuss the role of technology for a concept of reverse progress. Also presented are insights from the research project Dilemmas of Sustainability. As technology refers to procedures, structures, systems, and tools found in progressing already given procedures, structures, systems, and tools by scientific research, its concept of future is directed to the present. Concerning technology assessment (cf. Grunwald) and sustainability issues, addressing future(s) is equally indispensable. For technology, future is the horizon of possibilities given by present knowledge, howsoever extendable. Is it possible to think of a Politics of Technoscientific Futures escaping an understanding of progress circulating in itself, respectively, a progress bound back from the future to the present? Is technology itself an oppressive agent of the ‘Closure of Future’ – or is technology a revolutionary gateway to the ‘Openness of Time’, that is: to a future that is radically different to our present?

When revolutions changed the course of Western societies, the concept of ‘future’ had a crucial function in devising and shaping these changes, vouching for a promised land of freedom and equality. Likewise, the chosen path to this promised land was ‘progress’. This implied a new concept of ‘history’ as an open, makable and designable horizon for any idea of ‘good life’. As science developed, technology and industry became the dominant ways in which Western societies solved their problems, satisfied their needs, and fashioned progress. Kojève’s concept of ‘posthistoire’ referred to this status quo as kind of progress circulating in itself, thereby ‘crystallizing’ into Western culture. Thus, ‘future’, once again, opens up as a horizon of projection, but occupied by a strange concept of progress: Its presumption still is future as seen and extrapolated from the present – however, this time not as its negation, but as its extension.

228 UNFOLDING FUTURES AS MODAL TEXTURES - TOWARDS A HERMENEUTICS OF TECHNE, LOGOS AND POSSIBILITY

Bruno Gransche (Karlsruhe Institute of Technology - Institute of Technology Futures)

Hermeneutic efforts are classically directed toward texts (linguistic manifestations/textures). Philosophically, hermeneutic understanding is not just any grasping of what the author meant, but a refiguration of a configuration (Ricoeur), an inversion of a modification (i.e. changing the mode from possible to actual, Schleiermacher), or an unfolding (Auslegung) of something interfolded.
But we can transcend the merely linguistic notion of text and move to an unfolding of textures as everything that has been “folded”/created by texturing efforts (signs/material/social relations etc.). Those textures share a made-yet-given structure (i.e. objectifications of life/spirit, Hegel/Dilthey). Firstly, we can start by a hermeneutic distinction by Ricoeur: language (L1), realization of language (discourse, L2), and works of discourse (text/writing, i.e. linguistic textures, L3). L3 configures L2 into actual works; L2 realizes (modifies) L1; both exclusively, but

never entirely. L1 is the "totality of possibility" (Schleiermacher) or the medium of L2, likewise L2 of L3. Understanding as the inversion of modification (Schleiermacher) is to retrace L2 and L1 by the texture of L3; we understand the possibility of the higher level only by the detour of their respective manifestations. Secondly, consider three levels of technology: technology (T1), arti-facts as everything realized by art/techne (T2), and techne-textures, composed artifacts or systems (T3). The inner dynamics of modification, realization, conditioning is the same as in L1-L3. Therefore, we can understand technology itself - not only linguistic manifestations thereof – just as we understand language: as textured-texturing textures.

Thirdly, futures can be understood as modal textures that do not primarily configure/realize/condition techne/logos but possibility – thus their made-yet-given structure can be unfolded. Technoscientific futures, in particular, address not only what is (modally judged as) possible, but what can be (technically) made possible. The hermeneutical promise and challenge here are, that language, technology, and possibilities/futures are always interfolded with each other...

1043 WORKS AND WORLDS

Alfred Nordmann (Institut für Philosophie, Technische Universität Darmstadt)

The “politics of the future” begins with the question whether we consider the temporal development of our given world or whether we seek to imagine an alternative, perhaps better world. In the first case, images of the future are generated by way of extrapolation – is our current world sustainable or not, what adaptive measures might serve to protect and maintain it? In the second case, one imagines a world that is constituted by a feature or event that signifies otherness. Sometimes, an envisioned new technology serves as such an initiating event or novum which creates an ontological rupture: On the one hand it promises an unfamiliar, perhaps the future world. On the other hand it prevents all those things which we can acquire and train only in our familiar world: prediction, anticipation, consequentialist thinking.
How then can one gain access, understanding, imaginative participation in a past and mostly forgotten, in a future and forbiddingly alien world? Sometimes, we encounter isolated artefacts – technical objects supposedly made and used by people who live in a world that is radically discontinuous from ours. That is how we piece together images of “lost” cultures and civilizations. Archaeologists deliberately refrain from assimilating found objects to contemporary beliefs and practices: Who are these people who crafted these objects in this manner? Our relation to artworks that are created by our contemporaries can be productively similar. And perhaps, prototypes can be harbingers of the future in just the same way. These visionary prototypes speak of a remote and foreign world not unlike the archaeological artefacts of the past. And again, they speak of this world only as works of technology and art can be made to speak in a tentative, probing, precarious, reconstructive manner.

Room N109 - Panel 073. REACTIVATING URBAN MATTERS. PUBLICS, VALUATIONS AND COLLECTIVES IN/AS/THROUGH URBAN INTERVENTIONS

Julio Paulos (University of Lausanne)
Laura Kemmer (TU Berlin)
Jenny Lindblad (KTH Stockholm)

The way cities are conceptualized and governed has undergone a major shift in the past decade as place-making has evolved into a vital part of urban politics. Urban interventions, both material and normative, have infiltrated novel terrains that attempt to strengthen citizenship. In this political age, we are surrounded by tropes of crisis-induced urgency and calls for action as we grapple with paralysis, exhaustion, and chronic ruin. Sidewalks, cycleways, plazas, buildings, soils, electricity grids, trams, and trees become instruments and objects of political demonstration (Pilo’ and Jaffe 2020). The public good is being reactivated, outsourced to policy gurus, and held up by place-making prophets. Meanwhile, urban residents and movements of all kinds are constantly reactivating the resources ‘left behind’ from decades of emancipatory struggles. With practically every aspect of cities subject to imperatives of continuous innovation and the machinations of networked governance, such pluralistic practices of reactivating matters propose alternative answers to ongoing environmental and political crises that reject paradigms of newness (Papadopoulos, Puig de la Bellacasa, and Myers 2022). Scholars of urban STS have turned their attention to the way in which environments and technologies co-exist by describing and theorizing the socio-technical character of urban assemblages (Farías and Blok 2017). We invite papers that address how the modalities of such material politics and practices are re/framed as an evocation of urban collectivity. What is the implication of reactivating matters for contemporary urban politics, and how does it allow us to think and devise possible heuristics beyond the perpetuated logics of political and environmental crises? As a result, this panel veers away from urban STS modes of inquiry by

referring to reactivation as an essentially experimental notion (Stengers 2012), thus expanding our understanding of the role of urban matters in responding to planetary urgencies and exploring the way meanings and matters are inscribed in/as/through urban interventions according to their political and environmental relations.

During this session, papers will explore the material politics of urban re-activations through STS conceptual repertoires with and/or beyond science and technology:

(1) What matters are reactivated in contemporary cities and societies? How do these put the vocabulary of urban theory into variation?
(2) How do reactivated matters take on new constellations in urban politics, disrupting the slumber of the mundane and the familiar? What are the people, places, performances, and passages that are reactivated?
(3) How can we learn from the re-activity of urban matters beyond the standards of place-making? How do these not only disrupt imaginaries of innovation and participation, but how do they also embrace, elicit, and provoke new forms and framings of more-than-human co-existence?

Session 1

367 CODED JAYWALKERS AND THE PERFORMATIVITY OF SMART TRAFFIC LIGHTS

Pouya Sepehr (Department of Science and Technology Studies, University of Vienna)

In this paper, I aim to unpack algorithmic practices and smartification in everyday-life contexts. Revisiting some key STS literature known as the sociology of mundane objects, I will study a seemingly boring artefact that tries to order and control everyday life: a traffic-light. Through a multi-sited ethnography, I trace the design and implementation processes of “intelligent pedestrian traffic lights’ in Vienna. The technology recognises pedestrians’ intention to cross the street and automatically changes the traffic light for them. It is meant to do both, prevent jaywalking, and provide a better flow of urban traffic. This is a case of an artefact where an algorithm is meant to inscribe the idea of “good behavior.”
Investigating the emergence of the intelligent traffic light, I start by analysing publicly available documents, focusing on justifications for initiating such an urban intervention. Then, I engage with the design process and the sociotechnical assemblages in the making of the traffic light. I analyse the technical work in the development of the artifact based on the interviews I conducted with the scientific staff of the Technical University of Graz. In addition, I look at the sociotechnical aspects of traffic lights and the ways in which they changed the very meaning of streets over the course of 20th century. Finally, I reflect on my field visits where the traffic lights are implemented as testbeds.
My aim is to find out how traffic lights order and control the urban rhythm and how traffic experts prioritise different modes of mobility. Summarizing my observations, I will explore what the intelligent traffic light sees and fails to see. In arguing how things can be done differently, I suggest seeing smartification of traffic lights as an opportunity to renegotiate values and justice in the city in a new light.

548 BUILDING A “GREATER” PARIS IN RAW EARTH : MATERIAL POLITICS IN THE (RE)ACTIVATION OF URBAN SOIL AS A BUILDING MATERIAL

Jean Goizauskas (Centre de Sociologie de l'Innovation, Mines Paris) Carole-Anne Tisserand (Centre de Sociologie de l'Innovation, Mines Paris)

In 2015, the Paris Region launched works to expand its underground railway network into a « supermétro », namely the « Greater Paris Express ». Among the many implications of this huge urban project is the generation of a massive flow of excavated fill (approximately 45 million tons). In this context, the lack of outlets sites for soils in the Paris Region, increasingly referred as an « earth crisis », lead to the emergence of a « public policy of excavated earth » where several solutions are being considered for their storage, downcycling or revalorization. Our paper is based on a qualitative research focusing on collective projects that aim at transforming some of this « waste » from major urban projects into raw earth building materials - mainly bricks and plasters.

Excavated earth is not a completely new matter for urban actors, nor is the possibility of building with it, but the circulation and transformation of a soil from an excavating site to a building site and the related change of soil’s status from « waste » to « resource » are far from obvious and consensual. Indeed, this (re)activation of urban soils challenges the practices and knowledges of a range of existing urban actors, among which earthworkers, soil managers, architects and construction workers. Moreover, it participates to political debates concerning urban futures, from the relocation of industries to the contested necessity of major urban projects. By analyzing these

processes, our paper thus aims at contributing to STS works highlighting the reconfiguration of relationships between humans, cities and soils in a context of fast urban development and environmental concerns.

273 BUILDING THE MATERIAL CITY : THE TECHNO-POLITICAL MARGINALIZATION OF THE RED BRICK IN CAIRO (EGYPT)

Pérez-Houis Corten (University Paris 1 Pantheon Sorbonne)

Although the researchers' interest for political and social dimensions of circulating objects is not new (Winner, 1980 ; Appadurai, 1986 ; Akrich, 1987), building materials seems to be under analyzed, both by STS and urban studies. Following on from some recent publications about building materials and urbanization (Fry, 2014 ; Archambault, 2018 ; Choplin, 2019), I would like to propose an oral communication about the contemporary urban transformations of Cairo (Egypt) through the study of the red brick supply chain.

The precise description of the production methods, marketing networks and architectural use of this widespread material will lead to an analysis of the current urban and planning policies, in a context of demographic growth and rapid urbanization in the Egyptian capital. As the construction sector is progressively dominated by a military-controlled cement industry and submitted to strong pressure towards innovation and standardization, the popular red brick is being marginalized as a polluting and non modern material.

Public authorities can resort to public good discourse and more often to the urgent need for environmental protection in order to justify the exclusion of this building material. Thus, I will show that political speeches, a certain vision of the future of Cairo and economic strategies can be detected behind the technical debates and aspects of the Egyptian construction sector and industry.

This proposal, which also contributes to the decentralization of STS approaches in Southern countries, is based on several field surveys (February-March and May 2021), during which I conducted about thirty informal and semi-directive interviews with actors at all stages of the sector (producers, site managers, architects, engineers, etc.). I will also rely on a complementary field survey (February-June 2022) in order to develop further this multi sited and multi scalar approach of red brick as an urban building material.

289 POLITICAL MATERIALITY OF URBANISATION PROCESSES IN PORT-AU-PRINCE AMID DISASTER AND CLIMATE STRESS

Enkelejda Sula-Raxhimi (Saint Paul University)

This paper examines the urban challenges Port-au-Prince has faced in the aftermath of the devastating earthquake of 2010 and the urban policies – its logics, discourses and materiality, renewed and reactivated – to respond to such challenges.

Following the 2010 earthquake, about 1.5 million internally displaced people were located in Port-au-Prince and surrounding areas, adding pressure to a fragile housing and urban infrastructure. Such massive displacements gave rise to many camps and provoked an extended sprawling of the informal settlements; further exacerbated the inequalities and the social divide in the city, which led to pushing the poorest displaced Haitians out of the urban spaces, by blurring and extending the boundaries of the city into informal urban spaces. Concurrently, they forced the government and other actors to rethink and renew the urban policies and regulations in order to accept, formalize and extend these new urban spaces. The most prominent example is that of Canaan township. It started as a spontaneous settling place for thousands displaced poor who lost everything in the earthquake, despite the lack of potable water, sewage system, electricity, or other basic services. Others joined after losing their land, and material goods due to extended droughts, tropical storms, and other climate stress events. Caanan is currently home to about 300,000 inhabitants.

Through the case of Caanan township urbanization processes (or lack thereof), I examine the political materiality of such processes by addressing the following questions: How natural and climate disasters in Haiti reactivate matters - policy processes, ideas, urban designs, resilience and solidarity - and bring new, albeit imperfect, urbanisation solutions to city's growing challenges? How does the transformation of the urban space in Port-au-Prince reflect the social tensions and inequalities exacerbated by the disaster and climate stresses?

683 FROM URBAN GAMES TO URBAN RECIPES. THE EMERGENCE OF AN OPEN SOURCE URBANISM IN SPAIN (1994-2019)

Enrique Espinosa Pérez (Universidad Politécnica de Madrid / Universidad de Alicante)

In Spain, the 90s are the breeding ground for the collective practices of the 2000s (this even implies that the experiences of the post-Olympic and post-Expo92 local crisis represent a resilient heritage that is reactivated in the global crisis of 2008). What manifested itself in the 90's as dissident, activist, playful and protest movements, is at the same time the seed of a subsequent reorganization of the collaborative. What in the 90s remained underground, in the 2000s it unfolds in the urban in a multiple, massive and public way. What in the 90s responded to anarchist and guerrilla strategies, in the following decade is related to free culture and the logic of open knowledge.

This research tries to connect the practice of two Spanish cases, Santiago Cirugeda (Urban Recipes) and Zuloark, whose practice unfolds from 1994 to the present, and whose evolution shows the passage from some first dissident experiments to a subsequent open source urbanism in which protocols and prototypes are part of a complex construction and assembly between politics, technique and participation, between citizens, administration and technicians, between the field of the legal and formal and the alegal and informal spheres.

In order to reread how these practices transform not only disciplinary issues (assuming alternatives to conventional professional models in times of crisis) but also ways of making a city with a free culture logic, we will reread and connect these experiences with concepts such as urban assemblage (Farías and Blok, 2017), prototype (Corsín, 2013) or modulation (Kelty, 2008). In this drift we identify new words or learnings typical of the cases treated: normative and constructive hacking, collective intelligence, self-management and self-construction, and even humor or hedonism.

572 THE LAW OF URBAN SPECULATION. DEVISING PROPERTY RELATIONS IN THE CITY

Adolfo Estalella (Complutense University of Madrid)

Urban activism is an exceptional source of experimentation with the possible modes of urban existence and the reactivation of the city. Besides their political activity, we can learn from them how to pose relevant questions to the city in the endeavour to explore alternative modes of city life. In this presentation I present an argument about the relevance the law might have in the exploration of alternative modes of urban life. I draw on my ethnographic fieldwork and learnings with urban activists in Madrid (Spain) to describe how they engage in the technicalities of the law to produce technolegal devices and design alternative relations of property in the city.

Scholarly literature has offered since the turn of the century a compelling account of the intricate relation that activism maintains with the law. This literature has highlighted how the law becomes a disputed object that is contested, subverted, and resisted. In contrast to these renditions, I describe how urban activists engage in the production of technolegal devices aimed at devising alternative relations of property that aspire to a different city in common. While the law has traditionally been the dominion of what ought to be, I describe how in the hands of residents it becomes a space for what might be. This process highlights the relevance of the law not just to govern the present but to resist the futures of despair and bring with them alternatives to the not-yet: urban residents turn the law into a technolegal device for the speculation with alternative modes of urban living.

Room N117 - Panel 079. INNOVATION AND THE POLITICS OF TECHNOSCIENTIFIC FUTURES: PROBLEMS, ENGAGEMENTS AND POSSIBILITIES

Alan Irwin (Copenhagen Business School)
Jane Bjørn Vedel (Copenhagen Business School)

Innovation represents a powerful means of constructing socio-technical futures. However, innovation can take many forms: from ambitious statements (not least in Europe) about the development of nations and regions to more localized efforts at achieving responsible and sustainable change. Furthermore, 'innovation' is open to diverse conceptual and empirical perspectives: from case-studies of innovation-in-action to the analysis of larger political discourses around 'innovation futures' and from analysis of power imbalances and inequities to the more economic and policy concerns addressed by Innovation Studies. Innovation is significant within the larger politics of technoscientific futures. However, the ways in which it becomes materially constructed and interpreted is very much open to reflection, critical engagement and empirical analysis.

What problem formulations are embedded within current imaginations of innovation? What new kinds of public and socio-technical engagements can be imagined? What are the conceptual possibilities for understanding the relationship between innovation and emerging socio-technical futures? How is 'innovation' defined and framed within particular contexts? And what are the implications for our understanding of the politics of technoscientific futures?

In this session, we invite contributions from STS scholars whose work addresses the interface between innovation, STS and technoscientific futures. Contributions are invited which focus on the European context but also more globally. We invite empirical work but also conceptual contributions to the technoscientific futures of innovations.

Potential topics include: innovation, futures, engagement, policies, socio-technical change.

Session 1

889 ACCELERATING INNOVATION: TRACING EXPECTATIONS OF A PARTICLE ACCELERATOR IN THE MAKING

Noah Münster (University of Vienna, Department of Science and Technology Studies)

CERN has started investigating the feasibility of a next-generation particle accelerator: the Future Circular Collider (FCC). With an expected diameter of more than 100km and a cost of more than 20 billion Euros, the project will require the support of many social, political, and technoscientific actors. The discourse surrounding the FCC is full of promises and expectations of novel epistemic insights, societal benefits, economic growth, and innovation more generally speaking. This paper will investigate the future making practices and the justificatory narratives circulating around the FCC. Analysing documents ranging from feasibility studies, public relation materials, and popular science magazines, the paper will analyse the different orders of worth and the related politics of technoscientific futures surrounding the project. Doing so, it will not only give insights into the role of expectations in contemporary Big Science/High Energy Physics, but also provide an understanding of the wider (European) regimes of worth in which the FCC is embedded.

In this paper I will specifically focus on the diverse promissory discourses on the multi-layered innovations related to the FCC. While knowledge production in High Energy Physics has always been closely entangled with technological innovation, the sheer size of this project will also need quite radical socioeconomic innovations in the form of new organizational and funding structures. At the same time we encounter the hope that this multibillion project will produce technological spillovers of diverse kind. In other words, I will show how the justificatory narratives deployed around the FFC also bring into being rather broad and diverse visions of innovation going beyond the physics, into the socioeconomic and technological realm.

This paper is part of the project „Making Europe Through and for its Research Infrastructures (METAFORIS)" funded by the FWF I 3982

963 MISSION-ORIENTED FUNDING - A NEW ROLE FOR SCIENCE AND INNOVATION

Cecilie Hilmer (UCL University College London)

The new funding programme of the EU, Horizon Europe that will run until 2027 has dedicated a large chunk of the €95.5 billion budget to mission-oriented innovation. Within this programme, research, and innovation projects are funded depending on their potential to contribute achieving one of five missions on societal 'grand challenges' (e.g. "Adaptation to Climate Change: support at least 150 European regions and communities to become climate resilient by 2030", or "Cancer: working with Europe's Beating Cancer Plan to improve the lives of more than 3 million people by 2030 through prevention, cure and solutions to live longer and better"). These missions contain a notion of 'common good' and aim to steer the development of innovation by asserting the dedication to socio-ethical value as funding condition, assigning a new role to science and innovation in Europe. To be noted is that an important feature of missions is a concrete 'measurable' goal. Yet this new funding instrument is implemented within the same economic paradigms of the European economy and academic systems as its precursors that aimed to bring in principles of Responsible Research and Innovation into science and innovation funding and have been critically analysed manifold. This research aims to empirically investigate how missions get accounted for in mission-oriented innovation projects. More concretely, how are sociotechnical visions and goals such as "to improve the lives of more than 3 million people (…) to live longer and better" discussed and decisions negotiated – with other words, what happens when socio-ethical values become inscribed into the funding expectations through missions? I will share first results from interviews and ethnographic observations of participants of mission-oriented innovation projects and draw out implications of what this could say about the role assigned to innovation in the policy decision of introducing mission-oriented science and innovation funding.

541 ISOMORPHIC DIFFERENCE RELATIONS IN THE COMMERCIALIZATION OF NANOTECHNOLOGY: EVIDENCE FROM THE US NATIONAL NANOTECHNOLOGY INITIATIVE

Aixa Y. Aleman-Diaz (Copenhagen Business School) Alan Irwin (Copenhagen Business School)

The commercialization of nanotechnology research has been central to the National Nanotechnology Initiative (NNI) in the United States since its inception in 1999. Countries in Europe and Asia have also established their own programs with similar aims. The global commitment to moving nanotechnology research from 'bench to bedside' takes very distinct national forms, yet the literature on commercialization often relies on a vision of the state as a facilitator of innovation, remaining conceptually external to the innovation process itself.

The global reach of concepts of commercialization deserves a more sophisticated account of how this idea travels and gets operationalized within countries. The concept of isomorphic-difference relations (Irwin, Vedel and Vikkelsø, 2021) aims to describe how global ideas within science, technology and innovation policy travel and get modified locally, providing a multi-faceted interplay between local and global forces. In this paper, we set out to explore this concept in the context of US nanotechnology policy.

Reviewing policy documents from 1999-2021, we show how the increasing intentionality attached to the commercialization agenda obscures a complexity of meanings and processes that have changed to accommodate expanding and intensifying priorities over time. These relations of isomorphic difference extend STS notions of continuity and change in innovation policy by showing how, in their evolution, the commercialization agenda gets caught up in increasingly intricate institutional, social and political framings. This analytical and empirical scrutiny brings new understanding to the translation and adoption of current and global policy processes. It also introduces nuance to the understanding of shared trends within science and innovation policymaking that take on rather distinct forms in specific national contexts.

721 ANTICIPATORY PRACTICES AS LOCI FOR MODULATING THE GOVERNANCE OF INNOVATION AND SOCIO-TECHNICAL FUTURES

Konrad Kornelia (University of Twente)

Science, technology and innovation studies have shown the many angles how socio-technical futures feature in the governance of innovation (Konrad & Böhle 2019). The sociology of expectations has studied promissory statements and discourses related to specific innovation fields and their performative roles in research, innovation and policy processes. A further line of research is concerned with (macro)structural phenomena, such as how modes of future-orientation are culturally and historically dependent (Andersson & Keizer 2014), how socio-technical imaginaries are rooted in collective understandings of social life and social order (Jasanoff 2015) or have pointed to particular regimes of future-orientation closely related to modes of innovation, such as regimes of promising (Robinson et al. 2021).

Many STS scholars have followed an engaged approach by designing and conducting participatory forms of future deliberation or STS-inspired scenario processes (Konrad et al. 2017). In between work that is concerned with rather persistent structures and specific, often local cases, I would position meso-level work that addresses the underlying anticipatory practices that, either intended or as a side effect, shape socio-technical futures and their very roles in the governance of innovation (Alvial Palavicino 2016), many of those established in particular domains or supported by institutional frameworks.

In this talk, I suggest that this meso-level of practices, embedded in institutional settings, may actually be particularly interesting 'loci' (Rip & Schot 2002) for ambitions to not only study socio-technical futures, but to modulate common promissory 'routines' and dynamics. I will link these general considerations to examples of roadmapping practices at the nexus between public funding and innovation.

481 TECHNOSCIENTIFIC FUTURES IN INNOVATION POLICY AND RESEARCH: EMERGING IMAGINARIES OF ARTIFICIAL INTELLIGENCE IN BRAZIL

Guilherme Cavalcante Silva (York University) Katrina Nicole Matheson (York University)

The study of sociotechnical imaginaries and future expectations as reflected in innovation policy documents has emerged as a focal point in science and technology studies over the past decade (Kaltenbrunner et al 2021). However, most studies focus on the circulation of those imaginaries within North America and Europe or otherwise tend to offer a normative approach as to how imaginaries of innovation affect the Global South (Borah 2017). Dialoguing with STS literature on sociotechnical imaginaries (Jasanoff 2004), expectations (Borup et al 2006) and the social constitution of policy production and discourse (Irwin 2006; Birch et al 2020), we will analyze discourses arising from two policy documents: the government-issued Brazilian Strategy for Artificial Intelligence (EBIA), and the program mandate for the Brazilian Institute of Data Science (BI0S), both released in 2021. Although Brazil still lacks a regulatory framework for the development and use of AI, the juxtaposition of these two socio-technical artifacts arising from heterogenous social actors reveal an emerging dialectic with respect to the AI futures imagined for the country. Insights into Brazil's emerging AI imaginaries are even more crucial since contestations and controversies prove to be most explicit around the creation of innovation policies (Selin 2008). Further, because BI0S is the first interdisciplinary AI research institute of Latin America, Brazilian socio-technical imaginaries will likely influence AI innovation for the entire continent. Our goal is to identify and characterize how AI innovation is understood in two contexts - academic and government - and consider how the similarities and disparities in the discourses they create are positioned to co-produce innovation and knowledge in Brazil and the wider region.

Room N113 - Panel 081. RETHINKING VALUE IN CONTEMPORARY POLICYMAKING

Saheli Datta Burton (University College London)
Katharina Kieslich (University of Vienna)
Katharina T. Paul (University of Vienna)
Barbara Prainsack (University of Vienna)
Gabrielle Samuels (King's College London/University of Oxford)

Attempts to rethink what 'value' is or should be across various domains of contemporary policymaking has gained increasing currency. The conversation around more socially responsible valuography was already ongoing before the pandemic where calls had been made to pay more attention to less-easily measurable or monetizable value(s) previously ignored in policy. The urgency of this conversation has gained momentum in the last few years, as systemic fragilities of existing 'valuation' methodologies largely reliant on economic dimensions have become increasingly visible across diverse sectors such as energy, healthcare and transport.

In this panel, we welcome both conceptual and empirical papers on the issues of value and encourage speakers to reflect on the impact of their research on policy and practice. Suggested questions (but not limited to the below) are:

- How are practices, 'things', and processes made valuable in policy? What social practices and technologies are involved in these practices?
- Who gets to define value in contemporary democracies (policy, publics, science, industry) and by what means (e.g. quantitative measurements, qualitative best practices, policy agenda setting)?
- What criteria and value repertoires become salient in different spaces (organizational settings, policy contexts, movements etc)?
- How are ethical, moral, and political economic norms involved and what controversies can we identify? How have old or new controversies emphasised the fragilities/strengths of existing valuation systems since the pandemic?
- What methods can policy analysts use to address these controversies?

Session 1

679 MORALITY IN EVERYDAY NURSING WORK: CONSTITUTING VALUATION PRACTICES IN HEALTH CARE

Leenders Jooske (Erasmus School of Health Policy and Management) Wallenburg Iris (Erasmus School of Health Policy and Management) Pot Anne Margriet (Erasmus School of Health Policy and Management)

In the aftermath of the COVID-pandemic looms another healthcare crisis; a fast-growing shortage of nurses and nurse-assistants, especially within care for older people. Emphasis is put on the importance of valuing nursing work, assuming that values are clear-cut and prescribed within professional systems, becoming boxes to be thicked by the management team. Yet we know little about how nurses and nurse-assistants value their own work, and what kind of valuation practices this involves. In this paper, we aim to contribute to the upcoming stream of 'social responsible valuography' (Paul, 2021) by studying how valuation practices emerge in everyday care practice, and how this influences nursing work.

We conducted oral history interviews with nurse-assistants working in Dutch nursing homes. These oral histories aim let nurse-assistants reflect on their career paths, illuminating how they experience the constitution of values and valuation practices in their daily routines. We use the concept of moral orders (Woolgar & Neyland, 2013) to connect valuations to the particularities of 'doing' normative practices in healthcare (Pols, 2013). The oral histories reveal how nurse-assistants accomplish what they deem valuable within their work by way of a whole series of morally weighted descriptions and enactments. They express various moral orders, richly populated with activities they deem ordinary yet crucially important (e.g. putting the client first), (dis)preferred behaviours (e.g. managers not showing practical commitment), and (un)appealing actions (e.g. working within constraints of the collective clock). We point out these moral orders, envisioning how they constitute the (normative) valuation practices nurse-assistants engage in, what tensions arise, and which actors play a role. With this research we aim to contribute to STS by showing how these less-easily measurable and monetizable valuation practices slowly gain currency in organizational policies and healthcare policy making.

146 VALUING A VIRUS. HOW COUNTING PRACTICES CONSTITUTE COVID CARE

Roland Bal (Erasmus University Rotterdam) Syb Kuijper (Erasmus University Rotterdam) Bert de Graaff (Erasmus University Rotterdam) Iris Wallenburg (Erasmus University Rotterdam)

The ways in which valuation practices shape policy agendas has become even more prominent during the Covid-19 pandemic. Technologies of quantification have been at the forefront of this as society writ large has become suffused with numbers quantifying the virus and possible effects. Moreover, models of many sorts, but especially epidemiological models, have never been as performative. While a lot has been written about the ways in which models influence pandemic decision-making, the art of counting during the pandemic is largely neglected. Counting practices nevertheless matter as these form the input of models. Counting is moreover highly controversial. For example, while writing this, who should count as a Covid patient is contested in the Netherlands as more and more patients get into hospital with instead as for Covid care.

Building on an ethnography of Covid decision-making at the hospital, regional and national level, in this presentation we will (start to) analyze the ways in which counting was constitutive of governing Covid care. Drawing on the concept of qualculation, we will look at two counting practices; those of counting PPEs for the protection of workers in the hospital and those of counting patients and beds for the planning and distribution of Covid care across hospitals during the first and second waves of the pandemic. We show how counting is intrinsically tied to different valuations, normative choices, and the politics of care within and between hospitals and other care facilities. While much is expected of modelling patient and material flows in times of crises, such qualities also shift values of how we frame and enact governance in times of crisis.

737 BETWEEN DISRUPTION AND ENTRENCHMENT. HOW NESTS INFLUENCE SOCIETAL VALUES

Benjamin Hofbauer (TU Delft)

In this paper I explore two opposing ways in which New and Emerging Technologies (NESTs) can impact society. Namely they can be either disruptive or conservative. If a technology is disruptive, it has the potential to create new norms and values or challenge entrenched ones. Technologies however can also serve as a means to further solidify the norms and values of the status quo, entrenching existing behavior and perceptions of the world.

Societal norms surround us, and are constantly reproduced and reinforced through repetition. Shared social imaginaries, full of values and norms of how the world “should look” manifest themselves in the world as expressions of those values and norms (Taylor 2004). These imaginaries are present in the built environment (Winner 1980), as well as in shared aspirations of different communities (Jasanoff and Kim 2015; Hilgartner 2015). NESTs can be generative and disruptive forces, influencing and challenging these societal structures, values, and norms, as the literature surrounding techno-moral change highlight (Keulartz et al. 2004; Swierstra et al. 2009). Similarly, technology can create situations of normative uncertainty by re-negotiating the way we perceived the world and our responsibilities (Verbeek 2011; Nickel et al 2021). In this sense, NESTs can be disruptive, by either challenging old norms and values, or generating new ones.

Further, NESTS can lead to the conservation of current societal structures by making any form of change more difficult, and entrenching the status-quo. Scholars imply this conservative aspect of NESTs when the apparently dynamic character of technological development is said to not be able to keep up with the dynamism of societal change (Taebi et al. 2020; van de Poel 2015). Certain technologies could entrench different kinds of values and norms. In this sense, NESTs can be conservative and restrictive, solidifying old norms and keeping new ones at bay.

958 THE SOCIAL VALUE OF IMPROVING THE PRIMARY CARE RESPONSE TO DOMESTIC VIOLENCE AND ABUSE: A MIXED METHODS SOCIAL RETURN ON INVESTMENT ANALYSIS OF THE UK IRIS PROGRAMME

Meredith Hawking (Queen Mary University of London) Anna Dowrick (University of Oxford) Estela Barbosa (City University of London)

In this paper we outline our approach for making visible the value of addressing domestic violence and abuse (DVA) in health care settings, sharing findings from a longitudinal mixed-methods evaluation of the social value of a programme (IRIS) which aims to increase referrals from UK primary care into community-based DVA services. We followed Heuts and Mol’s(1) approach of identifying the ‘registers’ of value that were negotiated in

this work, using these to develop a social return on investment (SRoI) analysis that be can be used to make routines of work 'visible, comparable and negotiable' (2)

The research revealed three 'registers' of value : 'optimism' – promoting a sense of hope about addressing DVA; 'visibility' – raising DVA as an issue in the primary care system and identifying invisible women; and 'alignment' – improving alignment between the priorities of organisations addressing DVA. We identified five measurable social impacts against which the success of the work is assessed: 'connectedness', 'professional role', 'service user outcomes', 'programme compatibility with existing infrastructure', and 'credibility'. These outcomes were used to inform the SRoI analysis, offering a broader estimate of the social impact of the programme beyond contemporary policy and commissioning foci.

This work provides a persuasive account of the complex nature of social value that emerges from and can be attributed to a service. Here we demonstrate a worked example of efforts to increase the visibility of this complexity for commissioners and policymakers in community healthcare settings using STS- and economics- informed methods.

1. Heuts F, Mol A. What Is a Good Tomato? A Case of Valuing in Practice. Valuat Stud. 2013;1(2):125-146. doi:10.3384/vs.2001-5992.1312125
2. de Rijcke, Sarah; Wallenburg, Iris; Wouters, Paul; Bal R. Comparing Comparisons: On rankings and accounting in hospitals and universities. In: Deville J, Guggenheim M, Hrdličková Z, eds. Practising Comparison. Mattering Press; 2016:251-280.

915 WHAT'S IN A NAME? THE COINAGE OF THE NOTION OF "BIODIVERSITY" AS A TOOL FOR SCIENCE COMMUNICATION

Stefan Bargheer (Aarhus Institute of Advanced Studies)

Few scientific concepts have received the same amount of public resonance and support as the notion of biodiversity. The paper traces the creation of this relatively new concept and its impact on scientific research. I show based on archival documents that the neologism was coined in the mid-1980s by members of the U.S. National Committee of the UNESCO Man and the Biosphere (MAB) program in an effort to buffer the adverse economic impacts of the withdrawal of the United States from UNESCO that had been announced by the Reagan administration in 1984. With the United States no longer a member of UNESCO, the U.S. National Committee headed by a team of researchers at the Smithsonian Institution in Washington D.C. lost the majority of its funding previously provided through the U.S. State Department. The notion of biodiversity was invented as a catch phrase for public campaigning in an effort to find private sources of funding to make up for the loss of state support. With the use of the new term went a new argument for communicating the importance of studying diversity in nature. Under the UNESCO MAB program, diversity was heralded as a contributor to the stability of ecosystems, captured by the so-called diversity-stability hypothesis, which resonated with notions of political stability. With the re-location of the source of funding from state to market, emphasis was increasingly put on the provision of so-called ecosystem services and the market value of diversity. The paper shows how this change in rhetoric went hand in hand with a re-orientation in research priorities that continues to shape our understanding of the value of diversity in nature.

Friday, 8th July

11:00-12:30

Room N101 - Panel 009. FERMENTATION FUTURES: MULTIPLICITIES, MICROBIOMES, MAKING

Session 2

53 AIZOME: INDIGO BLUES, FERMENTATION AND COSMOTECHNICS

Ganaele Langlois (York University)

The Japanese tradition of indigo dyeing involves two fermentation processes: first the leaves of the Persicaria Tinctoria plant are composted, and second they are added to an alkaline fermentation vat where the dyeing of cloth can actually take place. Indeed, the indigotin compound contained in the leaves needs to undergo what is called a reduction in order to become first soluble, then capable of adhering to cloth fibers. Aizome is uniquely complex as it depends on the conjunction of several processes: quality of leaves, microbial activity during both fermentations, and the right level of alkalinity during vat fermentation. As well, water quality for the vat and post-dyeing processes play a key role in attaining high quality blues. The vagaries of the fermentation vat are notorious, and it takes immense training to be able to consistently obtain different shades of blues, from the lightest of morning blue to the deep black blue of outer space. The Japanese indigo process stands in stark contrast with colonial and post-colonial indigo practices that have long involved enslavement and brutal worker exploitation, unsustainable agricultural practices and the use of harsh chemicals to control and speed up the process of producing blue cloth. I argue based on interviews and field observation that practicing Japanese indigo dyeing necessarily involves giving up any sense of technical control in order to embrace a set of compositional practices to allow for multiple non-human actants and entities, some incredibly small (e.g. microbes) some incredibly big (e.g. water) to come together. Aizome is therefore a unique cosmotechnics (Hui, 2017) that assembles together making and living along a relational ethics among human and non-humans. In the current anthropocenic context, Aizome shows how a cosmology becomes not only a compositional technique, but also ongoing political practice.

297 THE NECROBIOME – FERMENTING IN-BETWEEN LIFE AND DEATH

Elena Beregow (Bundeswehr University Munich)

This presentation seeks to theorize the relation of life and death in and through fermentation processes. Against instrumental and securitized uses of fermentation, be it within industrial food production or in DIY fermentation, I would like to focus on the fermentation processes that usually aren't very appealing in how they look, smell and taste – and that probably would count as ‚accidents' of fermentation, unsuitable for human consumtion. Extremely bitter, sour and earthy tastes, slimy textures, pungent and fecal smells have a specific materiality to them that should be taken seriously; both in order to explore the challenging aesthetics of these microbial assemblages and to offer a critique towards anthropocentric logics that define what is ‚enjoyable' vs. ‚disgusting', what is ‚healthy' vs. ‚dangerous'.

The materiality of these ‚monstrous' ferments reminds of the fact that fermentation is not only a lively process but at the very same time a process of rot, decay and decomposition. The talk will conceptually account for this hybridity of life and death in fermentation processes by shifting the attention from microbiopolitics to micronecropolitics. I argue that the ‚necro' element cannot be reduced to the killing of microbes by means of pasteurization and sanitization but is a constitutive element of fermentation itself, and thereby complicates simple dualisms between life and death. For example, the fermentation processes that take place within the gut microbiome, literally expand throughout the whole body after death – the necrobiome seamlessly takes over and yet just continues the previous work of decomposition that is done by multiple microbial communities. The talk concludes with a discussion on the possibilities of a queer politics of such unsettling encounters.

359 WHEN FERMENTATION KILLS

Tereza Stöckelová (Institute of Sociology, Czech Academy of Sciences) Kateřina Kolářová (Institute of Sociology, Czech Academy of Sciences) Lukáš Senft (Institute of Sociology, Czech Academy of Sciences)

When we asked our research partner, a fermentation enthusiast producing vinegars and miso in the Czech countryside whether he uses antibiotic medicines when ill, he situated his nuanced response against the large context of the antibiotic processes the microbes in his backyard engage in. Explaining how his vinegar ferments in the wooden barrels, he detailed how different microorganisms fight and succeed over each other to produce

the delicious balsamico. He emphasized that he only “assists” in the process, facilitating lives of the microorganisms but also their mutual suppression.

The recent interest in fermentation and microbiota in sciences, medicine, and the popular culture is often conceptualized as part of the probiotic turn. While the scholarship concerned with the biopolitics of multispecies hospitality recognizes the “ways in which the lives of some are always conditional on the pain and death of others” (Lorimer 2020), these troubles are rarely foregrounded in empirical studies of probiosis. We focus on the antibiotic operations and effects involved in fermentative processes: how do fermenters deal with decay and spoilage? How do they use death to manage life in fermentation? And how do people with IBD manage fermentation in their guts through experimenting with diets and probiotics use.
Building on Beregow (2019) we attend to the ambivalent pluribiosis (Brives 2021) of microbial life. We ask how these forms of life destabilize and situate the categories of the good and harmful, healthy and unhealthy, and notions of thriving and decay in everyday life of human fermenters, eaters and patients.

How do they deal with, recognize and assume this “dark side” of fermentation, including the antibiotic activity of non-human life? In what time- and species-frames does fermentation make death and decay a part of life? We draw on our ethnographic research into fermentation and probiotic use in the Czech Republic.

Room N106 - Panel 011. INFRASTRUCTURED TIMESCAPES OF THE ANTHROPOCENE AND CLIMATE CHANGE

Session 2

503 CHRONOPOLITICS WITHIN THE MAINTENANCE OF CORPORATE ENVIRONMENTS

Lippert Ingmar (Brandenburg University of Technology/IT University of Copenhagen)

Environmental discourses shift over time. Corporations are interested in maintaining efficient systems that can translate their operation's environmental impacts easily into a given environmental logic (such as energy consumption, carbon emissions, water footprints, ecosystem services). For this purpose, an infrastructure commonly used by the maintainers of corporate environments, is accounting. For the accounting apparatus, material environmental relations are represented digitally. I attend to maintainers of such digital materials and analyse how they enact the corporation's environmental relations as sufficiently stable. I show that achieving such stability over time is indeed a critical project because the socio-technical relations of the infrastructure routinely threaten such stability. To substantiate this argument, I draw on ethnographic research into carbon accounting across a period of 20 months. Analytically, this problematisation draws on Annelise Riles' notion of the placeholder and Lucy Suchman's concept of configuration. In the paper, I set out from an artefact of the stabilisation of carbon within the project of reducing emissions in relation to a baseline. Then I analyse three brief vignettes. I tell of (1) too swift emission reduction; (2) the synchronisation of emissions; and (3) the versioning of environments. Across these analyses, I problematise how the maintenance of these corporate carbon emissions require continuous (re)configuration into an appropriately flexible environmental reality. In sum, with this empirical material I argue that a complex temporal politics is at work within maintaining emissions in the corporation to produce different versions of environmental realities.

803 NO-LONGER-IN-TIME SHIPPING: EMERGING SPATIOTEMPORAL LOGICS IN CLIMATE CHANGE LOGISTICS

Asher Boersma (University of Konstanz)

Recently, Northern-European rivers have become, despite centuries of industrious regulation and stabilisation, much less reliable as waterways. Climate change has unsteadied their presence. Extreme drought makes skippers face unprecedented water levels and rapidly changing riverbeds.

Therefore, this paper, relying on extensive fieldwork (Boersma 2020), maintains that such circumstances confronts actors ever more frequently with a double temporal challenge. First, improvisation is increasingly desired, a skill heavily reliant on mobile, networked devices, while the rapid changes make informal knowledge about the river, handed down through generations of skippers quickly irrelevant. This knowledge was until now what steadied skippers to meet the volatilities of the market.

Second, despite the need for improvisation, events in the field —Germany’s major steel manufacturer had to largely shutdown production as not enough iron ore could reach its production site— show that a less predictable waterway does not allow for the short-term logic and low stock of just-in-time logistics. This has effects far beyond Europe’s major ports and rivers.

Therefore, the paper zooms out to make an inventory of emerging temporal logics of global logistics in a time of climate change. Reverting to work done in geography (May & Thrift 2001) it argues that these have a clear spatial aspect too: take the year round opening of the Northeastern Passage and the Russian efforts to infrastructure this route, or he water shortage that the Panama Canal is facing. Even beyond such chokepoints (Carse et al 2020), interviews with Neopanamax captain and crew show how circumventing the increasing frequently storms they face world wide, are new spatiotemporal challenges.

919 TEMPORAL ENCLOSURES AND THE SOCIAL PRODUCTION OF INESCAPABLE FUTURES FOR COAL MINING IN COLOMBIA

Susana Carmona (Maastricht University) Pablo Jaramillo (Universidad de Los Andes)

The creation of spatial enclosures is a well-developed subject in the study of extractive industries. Less attention has been given to the control of time and the future within these socio-spatial contexts. Based on ethnographic

fieldwork, we followed two controversial projects aimed at expanding the biggest open-pit coal mine in Colombia, both of which implied diverting watercourses to extract coal from beneath their riverbed. We describe corporate strategies that give rise to what we call temporal enclosures, the process by which mining companies aim to restrict imaginable outcomes to those that favour them, producing the sense of a manageable and inescapable future in which forthcoming activities are presented as both inevitable and desirable. The temporal enclosure is configured discursively in practices of building engineered landscapes, refashioning relations between the mine and the people, and intensifying the language and practices of nurturing and caring for humans and non-humans around the operation area. However, in the context of increasing pressure regarding the consequences of extractive industries, the dispute over alternative futures becomes a highly relevant political site. We argue that this temporal dimension is interlinked with spatial, political, and economic dynamics around extractive industries and that understanding how temporal enclosures are produced and resisted is essential for envisioning sustainable alternatives. This paper is inspired by STS inquires into the making and imagination of the future. It puts into dialogue perspectives from STS, geography and anthropology to reflect on corporate use of techno-scientific knowledge along with other persuasion strategies to foreclose imaginable outcomes. Research into corporate managing of the future, specially with regards to the coal industry and extractivism, is key in broader debates about environmental conservation, climate change and reflection on the Anthropocene.

725 ENGINEERING THE FUTURE: ON CLIMATE MODIFICATION AND THE MACROSCOPIC VIEW

Theo Reeves-Evison (Birmingham School of Art)

Geoengineering is a term that describes a number of vastly different approaches to tackling climate change, from stimulating plankton blooms in the ocean, to increasing cloud reflectivity through stratospheric aerosol injections. What most of these proposals have in common is a shared conception of the planet as a giant bio-geophysical machine whose inputs, outputs and feedback processes can be altered with the right technological know-how, and whose diverse temporalities can be contained within an anthropocentric timescale.

For supporters of effective climate mitigation measures over the coming decades, geoengineering represents a hubristic enterprise and a moral hazard that undermines effective climate action in the present in exchange for the promise of speculative technologies in the future. This paper, while remaining highly critical of many geoengineering proposals, takes a step back from the moral debate in order to unearth the epistemological foundations of geoengineering as a techno-capitalist project, with a particular emphasis on visual cultures. It explores the role of cybernetic ecology, climate modelling and the ‘macroscopic view’ in the formation of geoengineering as an emerging knowledge infrastructure. It also looks at the ways in which artists have contributed to this mode of apprehending the planet. The master-plans of Peter Fend and his Ocean Earth Development Corporation feature here, as do the more critical climate art of Tega Brain, Julian Oliver and Bengt Sjölén, which pushes fantasies of AI co-ordinated geoengineering initiatives to their logical, and often absurd, conclusions. Technologies of abstraction are further unpicked in a work of speculative landscape architecture proposed by Anurundha Mathur and Dilip da Cunha. Without engaging with the subject of geoengineering directly, this project nonetheless points the way towards a mode of engagement with the future that loosens engineering’s addiction to the macroscopic view and predictive logics of control.

Room N102 - Panel 016. ENGINEERING AND CARING FOR LIVESTOCK FUTURES IN THE ANTHROPOCENE

Session 2

252 FOLLOWING THE BEEF: TRANSNATIONAL TRADE AND HOW SOUTHERN AFRICAN CATTLE ARE TRANSFORMING EUROPEAN LANDSCAPES

Pierre du Plessis (University of Oslo)

Transnational, neoliberal capitalism can have connected effects in geographically noncontiguous places. To date, scholars have studied these connections vis-à-vis the social and environmental impacts within the Global South (and formerly colonized landscapes) of tastes, values, and policies constituted in the Global North. This is important work; it reveals how apparently postcolonial economic and ecological arrangements build directly—if obliquely—on colonial ones. Lesser studied, however, are the ways in which these transnational connections and flows can have important ramifications for ecologies and ecological subjectivities within as well as outside of Europe.

In the Anthropocene, and a globally connected world, the material and ecological effects of neoliberal economic growth projects are multi-sited and generate new interspecies relationships. This presentation considers the socioecological changes brought about by preferential trade agreements that bring large quantities of beef to Norway from Botswana and Namibia. It builds on previous research in order to “track” the movement of knowledge, value, and species as they participate in the emergence of a noncontiguous zone of beef production/consumption that connects across the Global North and Global South in sometimes unexpected ways. It begins by tracking how European trade agreements institute sets of conditions that promote market driven forms of economic growth onto African environs that are simultaneously embroiled in emerging “green transitions” in the European. It then considers how trade agreements that bring southern African beef to Norway impact those multispecies communities in both regions. Critically, it asks: How do cattle from the Kalahari Desert play a role in shaping Norwegian agricultural and industrial landscapes? Conversely, how do Norwegian tastes for fine cut beef impact Kalahari landscapes?

456 CARING FOR DIGESTION: THE METABOLIC POLITICS OF DAIRY FARMING IN THE NETHERLANDS

Else Vogel (University of Amsterdam)

Current environmental crises highlight that humans not only relate to farm animals through eating or companionship; we are inhabitants of the same ecosystems, sharing ecological and pathogenic vulnerabilities unevenly between us. This is particularly apparent in the densely populated Netherlands, where over half of the land is used for agriculture and horticulture. In this paper, I explore what efforts to reduce the environmental effects of intensive dairy farming in this country do to cows, farmers and situated notions of ‘good digestion’.

I focus on a proposed law aimed at curbing the release of ammonia from livestock manure by limiting the protein content of feed concentrate. The 2020 initiative, that aimed to bring Dutch emissions in line with European directives on nature conservation, became highly controversial. Based on document analysis, observations of dairy farming and interviews with veterinarians and farmers, I tease out the values embedded in the knowledge, standards and practices relevant to the controversy. To reduce nitrogen emissions controlling cows’ digestive capacities accountably, the government relied on generalized input-output calculations based on statistical knowledge of farms, soil, feed and animals. I show how this way of ordering cows’ digestive capacities clashes with the ongoing tinkering and customization that characterizes techniques of dairy industrialization, risking not only milk productivity but also the health of cows.
This paper thus explores how concerns with the sustainability of dairy farming are translated into measures; as well as the subsequent effects of such measures in practice. What emerges is a metabolic politics through which various parties produce ‘goods’ through the stomachs of cows – such as nature reserves, food production, and animal welfare. The challenge, I suggest, is not to convince stakeholders of the value of sustainable farming, but rather, how to socio-materially embed and embody different forms of ‘good digestion’ in practice.

401 IS YOUR COW TO BIG? ENGINEERING LIVESTOCK FUTURES IN SOUTH INDIA

Daniel Muenster (University of Oslo)

This paper contrasts two competing livestock futures in the South Indian state of Kerala. Both futures depend on engineering, breeding, and caring for cows as manifestations and material promises of these visions. The state, through policy and science, is invested in techno-scientific futurities through the import of European bulls, an extended artificial insemination program, and the roll out of veterinary assisted reproduction of high yielding cows. This techno-scientific program, also known as White Revolution enacts a future of market integration, income generation through milk cooperatives and the dairyfication of Indian diets. In the Kerla, the state's initiative to develop a strong dairy sector, has nearly exterminated native, Bos indicus breeds (deemed unproductive), replacing them with hybridized European (Bos taurus) livestock. The other vision of livestock future goes the opposite route by valuing, classifying and breeding traditional breeds of Indian livestock. Their significantly smaller size, aggressive temperament and low yield in milk have made them the target of modernizers. They are valued, however, not only by enthusiasts of bovine bio-cultural diversity but also by agro-ecologists in the region who regard these “small” cows as prime producers of beneficial microbes. Native cows are valued by small-scale farmers working towards a ecological future of self-sustained farming based on microbial soil care. Focusing on the controversies around native cows, this paper traces the ontological politics of these competing techno-scientific visions. I argue that the controversy over the value of small versus big cows references a larger debate about the ecological and economical future of small-scale land use.

Room N118 - Panel 024. EMOTIONS AT WORK: THE AFFECTIVE DRIVERS OF TECHNOSCIENTIFIC WORKPLACES AND FUTURES

Session 2

750 HOW THE INTRODUCTION OF ARTIFICIAL INTELLIGENCE IN HEALTHCARE IS MODIFYING THE ROLE OF MORAL EMOTIONS IN THE FIELD

Eliana Bergamin (Erasmus University Rotterdam)

My research focuses on how the introduction of Artificial Intelligence technology in healthcare is modifying the role moral emotions play in the field.

Moral emotions such as empathy, sympathy and compassion are key to healthcare practice and medical education. However, the recent implementation of research and methodologies that are data-focused disturbs the traditional practices of empathy and compassionate care. The introduction of technologies such as AI impacts the empathetic practices between patients, relatives, researchers (e.g. data scientists), and medical staff. Techniques such as data-driven diagnostics, clinical trial enrolment, and AI risk, prognosis & data management jeopardize the possibility of explicitly approaching medical practice and research with empathy and care.

Following Roeser, I argue for a rational understanding of moral emotions, which doesn't pose them in disagreement with "standard" scientific practices (Roeser, 2018). Relying on the theoretical background of mediation theory, which states that technologies act as mediators in the relationship between humans and the world, I claim that technologies also mediate our emotional understanding of AI use (Verbeek, 2001). Putting emotions in the foreground of healthcare research and practices makes it possible to explicitly implement care in healthcare practices, especially and most importantly in scenarios mediated by AI. The development of rigid "ethical toolkits" that are currently being implemented does not consider the human imperfectability that is inherent to human – and healthcare – practice (Amrute, 2019). For this reason, it is crucial to make the role of moral emotions explicit in the implementation of AI in healthcare. Shining a light on the care aspect in this field can not only lead to a better understanding of the relationship between caregivers and receivers, but also make visible how AI technology can be better designed and implemented to fit this sociotechnical scenario.

308 PATTERNS IN PRACTICE: EMOTIONS, BELIEFS AND VALUES IN MACHINE LEARNING FOR DRUG DISCOVERY

Jo Bates (University of Sheffield) Itzelle Medina Perea (University of Sheffield) Helen Kennedy (University of Sheffield) Erinma Ochu (Manchester Metropolitan University)

In what ways do emotions interact with culturally situated beliefs and values to shape data practitioners' engagements with predictive machine learning in different contexts of practice? And, in what ways do these affective "data cultures" influence relations between differently situated groups of practitioners and the people impacted by their work? These are questions we aim to answer on Patterns in Practice, based on ethnographically informed work across three cases. In this paper, we will discuss early findings from our first case study – pharmaceutical drug discovery.

The use of AI techniques in drug discovery has a long history with waves of interest dating back to the 1960s. However, similar to other domains, the last couple of decades has seen renewed interest fuelled by the rapid growth of available data, the increase in computing power, the development of new methods for processing data, and the optimisation of machine learning algorithms.

These developments have provoked mixed reactions within the drug discovery community. They have brought excitement and enthusiasm, but also fear, anxiety and scepticism. Many have argued that the current AI hype overlooks many limitations of these techniques and raise concerns about their black-boxed nature. Such beliefs, values and feelings play out as complex power dynamics among practitioners across the drug discovery pipeline.

We will present our early analysis of a series of interviews, focus groups, diaries and observations with a team working on a drug discovery project at a major UK pharmaceutical company, reflecting on how our participants emotions, values and beliefs about machine learning techniques and practices in this context are shaping their culture of practice and how they relate to one another and the people impacted by their work.

229 ETHNOGRAPHY, EMOTION AND FEMINIST ETHICS IN THE VETERINARY CLINIC

Vanessa Ashall (University of York)

This paper demonstrates the intensity and variety of emotions which are experienced in the veterinary clinic, as a unique site of scientific/medical knowledge development and application. I ask: In what ways do these emotions respond to and work towards the management of human-animal relationships in this context? Finally, I argue that increased attention to affective states in the veterinary clinic has the potential to challenge traditional understandings of the production of veterinary knowledge and professional ethical norms.

The paper first explores some examples of the limited existing ethnographic studies of veterinary medicine (Morris 2012, Hamilton 2007). I demonstrate the ability of such work to illuminate the hidden emotional, material and sensory aspects of veterinary work. I argue that the role which veterinary emotion work plays in decision making, regarding the application of medical and surgical technologies to animals, has been largely ignored. Further, I suggest that developing feminist, rather than traditional bioethical analyses of veterinary practice, may provide a new perspective on the generation and maintenance of veterinary professional knowledge.

This paper contributes to the development of the field of STS through promoting the use of non-traditional methods of knowledge production, such as ethnography, to the study of the veterinary encounter. As such, the paper builds on existing empirical work in STS which examines the complex emotional contexts of human animal relationships in techno scientific 'care' settings' (Friese and Latimer 2019). Furthermore, the paper extends the application of influential feminist ethical approaches from the field of STS (Haraway 2016, Gruen 2015) towards an important but currently neglected site.

874"MY DREAM WAS TO MAKE A CERANA VALLEY": THE CASE OF APIS CERANA AND MUD-HIVES IN KULLU HIMALAYAS

Kesang Thakur (Independent Researcher) Syed Shoaib Ali (Ambedkar University Delhi)

The story of commercial beekeeping in North India unfolded alongside Green Revolution with the establishment of Apis mellifera, also known as the European/commercial honey bee, as a series of research projects at the Punjab Agriculture University during the 1960s. But this paper traces a more subaltern trajectory of agriculture science research and community engagement in the Kullu Himalayas towards conservation and revival of the endemic Apis cerana. It draws upon ethnographic research to summon the moral, embodied, and emotional stakes of entomologists at the Nauni University of Horticulture and Forestry in the Himalayan state of Himachal Pradesh.

As a discipline found under the aegis of Green Revolution — productivity, profitability, and scalability are still central to debates in agriculture sciences. Apis cerana hives have 3 to 4 times lesser productivity, and are significantly more difficult to domesticate than Apis mellifera. Yet the project held a public foothold, and Apis cerana hives are common among the beekeepers of Kullu. We weave together sensorial descriptions of beekeeping, training programs, and the indigenously built mud-hives into stories where scientists and beekeepers talk about the importance of holding things in hand, anthropomorphise bees as yogini (mystics), and talk about shaping the (agrarian) environment as cultivation of attentiveness and virtue. Most of the scientists involved in the project are well-published authors, but there is little published about it. Through this paper we document the manifold opportunities and dilemmas agriculture scientists face in shaping and communicating scientific research and community engagement.

Room N105 - PANEL 027. SITUATING DEMOCRATIC FUTURES

Session 2

989 COLLABORATIVE AUTONOMY: OPEN SCIENTIFIC INSTRUMENTS AS A DEMOCRATISATION ARENA IN THE GLOBAL SOUTH

Julieta Arancio (University of Bath)

Open science hardware is the practice of sharing the designs of science tools online for anyone to study, modify, distribute, make, or commercialise them. Inspired by open source software, the maker movement and open science ideas, practitioners around the world are increasingly developing and maintaining open scientific tools in a wide span of fields. Projects are developed by academics, community scientists, teachers, artists and entrepreneurs around the world. Practitioners claim that by opening the access to tools for knowledge production, science and technology become more efficient but also "more democratic", due to collaboration and co-production enabled by openness. To understand what "more democratic" means in practice, I collected data through interviews and participant observation (2017-2020) of four open science hardware projects in the Global South. Using a design justice perspective, I analyse who participates in the projects, which jobs they perform to participate, and the mechanisms used to embed the assumptions and agreements of participants into hardware. Findings show that practitioners frame democratization differently: some focus on the process of including non-academics in science; others on accessing the means to overcome the financial and burocratic barriers for local research and innovation. Borrowing terminology and methods from design, academic/activist roles are key for implemeting strategies that enable co-production. These facilitation processes enable dialogues that become encoded in multiple, coexisting versions of situated science tools for socially useful production of science. I expect this work contributes to further understand the role of scientific instruments as mediators in knowledge production processes, and how they can become an arena for democratising science and technology.

731 SPACE TECHNOLOGIES, INTERNET, AND GLOBAL FUTURES: SOCIO-TECHNICAL IMAGINARIES OF THE SATELLITES MEGA-CONSTELLATIONS

Zinaida Vasilyeva (Technical University of Munich, Department of STS)

Satellite mega-constellations (SMCs), that is networks of a high number of small satellites placed in the low orbit, is a major trend emerging with the current wave of the so-called New Space Economy. Since the middle of the 2010s, SMCs attract billions of dollars from private investments and are continuously described as offering endless economic opportunities and social benefits associated with global internet access coverage. Although many questions about the technical and economic feasibility of the SMC infrastructure remain unanswered and the future ecological impact of the SMCs raises worries, mass media and stakeholders of the space industry frequently present SMCs as a technology having the potential to offer global internet access, which in turn is framed as a basic human right and a means to boost education and fight poverty around the world. In my paper, I will discuss arguments used by different actors to legitimize and problematize SMCs. I will particularly focus on the tensions between different understandings of the common good and the framing of space technologies as “sustainable”. Using the concept of “sociotechnical imaginaries” (Jasanoff and Kim 2015), I will demonstrate how SMCs narratives reveal and manifest conflicting visions of the future. The empirical part of my study will be based on the discourse analysis of mass media and interviews with professionals of the space industry and activists.

477 BLACKOUTS, WHITE LISTS, AND INFORMATION COMBAT: MAKING SENSE OF CONTESTED, DIS/CONNECTED SOCIO-TECHNICAL IMAGINARIES AFTER MYANMAR'S COUP

Stefan Bächtold (Monash University Malaysia)

In Myanmar, although democracy has been declared several times, it is better described as fluctuating, situational, more ephemeral than substantial, and, with the February 2021 coup, de facto cancelled. What this recent coup brought to the fore, however, are the growing entanglements of democratic and non-democratic practices with digital technologies; and the contested socio-technical imaginaries that are underpinning these political struggles.

In light of these considerations, this paper analyses practices like the blackout and whitelisting of mobile internet services by the military; the online mobilisation for popular protests against the coup; or the "information combat" waged via soldiers' social media accounts. These practices are understood as performing and reifying contested socio-technical imaginaries of the country's future.

In this assemblage of 4G networks, social media platforms, and violence the boundaries between democratic and non-democratic practices blur and become even more situational with the shift from non-violent protest towards armed resistance against the coup. Secondly, the case of Myanmar renders visible the highly ambiguous potential of digital technologies in this assemblage - both enabling novel democratic and non-democratic practices.

Finally, the highly contested situation in Myanmar also raises questions about the concept of socio-technical imaginaries itself: How do we analyse competing, contradicting, multiple imaginaries? How to analyse racialised imaginaries and their exclusionary effects; or popular resistance strategies to imaginaries championed by state authorities? Examining a case like Myanmar allows an attempt to empirically explore these questions, and to reconsider democracy not as an abstract and taken for granted concept, but as performed, contested, and reified via situational, fragmented, and ambiguous practices.

816 BEYOND DEMOCRACY: WHAT PUBLIC PARTICIPATION FOR THE TERRITORY OF THE FUTURE?

Carole-Anne Tisserand (SI, Mines Paristech)

In recent years, many smart city projects have emerged around the world, with the idea that new technologies will enable the creation of territories that can better meet the needs of citizens. As a result, there has been an increase in forms of involvement linked to the context of innovation, such as hackathons and other challenges. In this context, the Paris Region launched its program called “Smart Region” program (2017). This program is based on the development of co-created innovations between different actors considered as partners: territories, companies, and citizens.

The implementation of this project raised a range of problems. On the one hand, private actors were reluctant to involve citizens in their projects, arguing that they are not concerned by such a public issue. On the other hand, the Region had difficulties to define the "Smart Region" public: How to identify the relevant citizens to involve? How to make them co-create?

Based on a qualitative research, my paper first explores the controversies presented above. It shows that negotiations between the actors led to the rejection of the terms "democracy" and "citizens", which they consider outdated, in favor of more attractive words to the private sector ("user design", "consumer").

Then, my paper analyzes the practical embodiment of these reflections. Indeed, the Region organized quick workshop formats, which referred to a certain idea of what should be the citizens/users to be involved: overbooked, and not having time to get involved in the usual participation formats. Moreover, these workshops illustrate which modes of involvement must replace democracy and its tools judged ineffective and irrelevant by the Smart Region leaders.

It thus aims at contributing to STS works highlighting the reconfiguration of public and public participation that the Paris Region engages through its aim to co-create an innovative and smart territory.

1003 A CASE STUDY OF EU ENERGY EFFICIENCY POLICY THROUGH THE LENS OF INDICATOR POLITICS

Tessa Dunlop (Autonomous University of Barcelona) Thomas Voelker (University of Bergen)

Our paper is a case study of the passage of energy efficiency legislation (Energy Efficiency Directive) in EU parliament (EP) between 2016 - 2018. We show how an ostensibly technical debate about the calculation of energy efficiency measures is also a political controversy weaving together different disciplines, methods and their premises & assumptions with actors and their goals and interests. The study explores the notion of ‘democratic politics’ by revealing how powerful interests are constantly re-shaping the definition and calculation of energy efficiency – and who gets forgotten in this process. This paper contributes to a gap in the literature to show how indicator politics plays out within the formalized proceedings and mechanisms at the transnational level of the European Commission and EP. By applying a set of analytical tools taken from work within STS that is interested in the enactment of realities through material-semiotic practices, we show how the case study is not ‘merely’ a controversy about questions of proper definitions and methodologies of measurement, but instead as a moment in which a certain version of energy efficiency was enacted as an actual object that can be measured and governed. Understanding this moment in the ongoing struggle over the “best” way of defining and measuring of energy efficiency through the lens of enactment allows us to zoom in on how the technical gets woven together with political and organizational orderings as well as with implicit normative assumptions about the common good

and desirable futures. Energy efficiency as an object that can be measured and governed is thus the temporally stabilized outcome of this ongoing debate, not its starting point. Therefore, we can observe ‘democratic politics’ through the malleable and changeable quantitative representation and application of the concept of energy efficiency.

Room N115 - Panel 030. POLICY INSTRUMENTS AND THE MAKING OF SOCIOTECHNICAL FUTURES: PRODUCTION, CIRCULATION, AND EFFECTS

Session 2

1033 UNCOVERING TECHNOLOGICAL COMPASSION: CLIMATE SERVICES, GLOBAL ANTICIPATORY RISK MANAGEMENT AND THE POLITICS OF CLIMATE CHANGE ADAPTATION

Sebastien Nobert (University of Montreal) Etienne Tardif-Paradis (University of Montreal, Université Catholique de Louvain)

In the space of a decade, climate services (CS) have moved from being defined as low skill forecasting devices to become prominent risk assessment instruments of global reach. While their emancipation can be associated with the fast technical developments in the realms of computer science and engineering, their increasing popularity in the spheres of policymaking and disaster risks reduction is also resulting from the global political threat that has become climate-related risks and hazards. Drawing on the geography of risk and hazards, the sociology of institutions and science and technology studies (STS), the paper examines how CS has allowed the European Commission (EC), through Copernicus climate change initiatives, to ensure its political relevance in the fight against global climate change. This exploration allows the paper to develop the notion of technological compassion, which allows political interventions through technological expertise to achieve humanitarian ambitions affected to adapting to climate change. Building on image and documentary analysis of European Commissions initiatives on climate-related risks management and humanitarian aid, the paper explores how the discursive fabric of producing CS as ultimate climate change adaptation tools are tacitly revealing sets of rationalities, morals and values that have been normalised in defining global and compassionate interventions on climate change. By documenting how technological compassion takes shape in the narratives of CS development and export, the paper helps refining our understanding of the relationships between expert authority, humanitarian governance and adaptation to climate change. The paper concludes by offering a critique of CS that engages with the normativities and moralities at play in the technological fixes meant to improve climate-related risk management.

609 (RE)ASSEMBLING ENERGY POLITICS. PREDICTIVE POLICY ASSEMBLAGES IN ENERGY POLICYMAKING

Stefan C. Aykut (Universität Hamburg)

Forecasts and scenarios calculated by energy system models are ubiquitous in energy debates. They are used by a wide range of public and private actors to make investment decisions, identify problems, and support or criticise specific forms of political intervention. The article presents an analytical framework for studying such entanglements between predictive practices and policy-making. Drawing on work in STS and the anthropology of politics, energy policy is conceptualised as a field of contention, populated by competing predictive policy assemblages. This concept is tested against the backdrop of the history of German and French energy policy-making, focusing on three periods. In the post-WWII decades, energy forecasts contributed to the structuring of ‘energy policy’ as an autonomous policy domain concerned with choosing between different energy supply options. This dominant paradigm was challenged in the 1970s and 1980s, when new modelling techniques forged by civil society groups brought energy demand and renewable energies to the fore politically and helped structure new political alliances. The emergence of a decarbonization paradigm in the 1990s/2000s constituted another shift in energy policymaking in both countries. The article concludes by arguing that new ways of ‘assembling’ energy systems in models and forecasts can contribute to policy change, if they successfully ‘perform’ energy policy along three dimensions: by instituting alternative future-visions; by enabling new forms of political intervention; and by contributing to the formation of new ‘predictive policy assemblages’.

995 THE CONTROVERSIAL PRODUCTION OF THE FUTURE OF ENERGY EFFICIENCY. THE CASE OF ENERGY LABELS FOR BUILDING IN FRANCE

Mallard Alexandre (Mines Paris, PSL University, Centre de Sociologie de l'Innovation - i3, CNRS) Grandclément Catherine (EDF R&D)

Sustainable building is one of the areas of government that involves projecting into a distant future. In France, for example, public policies aim to align the whole housing stock to low carbon standards by 2050. The Energy

Performance Certificate (EPC) is a policy instrument which, in recent years, has become crucial for such projections. Set up in 2002 by a European directive which transposed to the real estate market energy labels that were previously used for light bulbs and household appliances, this tool enables to rank dwellings on an A to G (green to red) scale according to their energy performance. Originally used to provide information to the market on the quality and value of real estate goods, the EPC has become a central instrument in sustainability policies. Recent reforms of this tool, started in 2019, offer a crucial venue to examine the interplay of metrological requirements and political considerations in planning operations. One of the aims of these reforms was to enable the exclusion from the market of dwellings with a low energy performance: it was decided that G-rated dwellings would be banned from being rented out in 2025 and F-rated ones in 2028. The reforms involved a modification of the EPC calculation methods so as to increase its reliability, but also fierce discussions in political circles on connected issues: the truthful representation of the current building stock, the reachability of climate-policy objectives targets, the relevance of underlying energy choices and questions of social justice at the core of the real estate market. Based on a closed study of technical and political debates surrounding these reforms, this communication will bring light to the role of this instrument in the controversial production of futures for the real estate market.

200 THE EU'S CIRCULAR ECONOMY ACTION PLANS AS A POLICY INSTRUMENT TO SHAPE THE FUTURE

Josep Pinyol Alberich (University of Exeter) Mario Pansera (Universidade de Vigo) Sarah Hartley (University of Exeter)

There is a need to reformulate the economy to address global environmental challenges such as climate change or biodiversity loss. Socio-technical imaginaries (STI) can prescribe futures that are ought to be attained (Jasanoff & Kim, 2009). The circular economy (CE) is a case of a STI that aims to develop a sustainable vision of the future economy. In 2020, the European Commission published its CE Action Plan to foster the European Union's transition to the CE. Through this Action Plan, the Commission seeks to privilege scientific and technologic developments to foster a 'circular' future. However some authors claim that in the case of technological solutions to environmental problems, the CE may prioritize economic value over socio-environmental outputs (Kershaw et al., 2020).

We explore what futures and what kinds of innovation the Action Plan will likely reproduce. We address this question through content analysis of the Commission's main CE strategies between 2011 and 2020. We use Bauwens et al.'s (2020) circular futures scenarios as a model to understand how the Commission has prescribed circularity.

We argue that the CE strategies privilege a circular modernism future characterized by advanced and complex technological innovations and centralized governance. This findings confirms how STI influences imagined futures by shaping innovation and their governance (Konrad & Böhle, 2019).

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Room N107 - Panel 031. RETHINKING POLICIES AND INSTITUTIONS THROUGH CO-CREATION, USER-DRIVEN INNOVATION & RESEARCH IN THE WILD

Session 2

152 ORGANISATIONAL TRANSLATIONS AND USER INNOVATIONS IN HEALTHCARE

Arturs Holavins (Maastricht University)

Involvement of end-users and grassroot organisations representing them is widely recognised as vital for quality and ethics of medical services. However, medicalisation and other institutional processes relying on expertise-by-training produce unequal power relations by delegitimising patients' experience-based expertise. This jeopardises efforts of concerned communities to participate in healthcare.

The article offers a new perspective on how unequal power distribution in healthcare might be addressed. The paper builds on the idea that a translation of knowledge and practises is needed for a common work by actors. Specifically, it explains how operational activities, like project or event management, are crucial for a translation work, as such practises are the common hospitals, laboratories, ministries, and patients share. Moreover, patient organisations mediating between other healthcare actors, such as medical professionals and state officials, legitimise patient participation in healthcare by claiming translatory expertise, including operational excellence.

Empirically, the paper is the analysis of documents and online ethnography of patient organisations in Russia. The data is used to investigate patient organisations' translatory expertise embodied in various organisational and mediating practises in maintaining the hierarchy of knowledge in healthcare, and outline how this affects healthcare governance. Epistemologically the paper treats translatory work as both dialogic and material practises. It is not just a common language around matters of a shared concern (Callon et al., 2000). Instead, operational activities are something done in different spaces, with different tools and methods than other expert practises (Nicolini, 2011; Marres, 2012). In conclusion, the findings and a conceptual framework provide directions for a wider discussion of how mundane operational work co-produces, shapes, and enacts dominant institutions and policies shaping technoscience in the context of a Latourian common world.

489 MONITORING INNOVATION: TECH WATCHDOGS AND DIGITAL PUBLIC SERVICES IN ITALY

Michele Veneziano (University of Bologna)

The term "digital public services" refers to those services provided by Public Administration (PA) via ICTs to citizens and/or private entities. Across Europe, digitalization of public services is a core element of digital transformation plans, and delivering such services requires the development and orchestration of a complex ecosystem of apps, websites, enabling platforms, and digital infrastructures. Several actors shape (and are shaped by) digital public services, but not all of them have been equally studied. For instance, most of the attention in co-production studies focused on the role of end-users, exploring how citizens actively participate in the delivery and design of public services. Nevertheless, the role of collective actors such as civil society organizations that act as watchdogs has been largely overlooked, even though these types of organizations are flourishing all over Europe. This study conceptualizes the analytical category of "tech watchdogs", defined as those bottom-up initiatives and organizations that monitor the development, functioning, and usage of a technology or of a set of technologies. This work further investigates the role of two tech watchdogs in Italy that actively engaged in monitoring the development of digital public services. Since the digital transformation of PA in Italy is still in its early days, this gives us the possibility to look at the digitalization of public services in the making. Based on in-depth interviews with activists and desk research on the documents/tools they produce and the initiatives they carry on, this work explores monitoring activities as co-production practices and examines the point of view of tech watchdogs (the opportunities they seek and encounter; the limitations they face; and the values that guide their effort) in the social shaping of digital public services.

676 REAPPROPRIATION OF AGENCY AND THE RE-SHAPING OF SUBJECTIVITIES OF CAREGIVERS AND PATIENTS WITH CEREBRAL PALSY

Lorenzo Urbano (Politecnico di Milano)

Rare diseases often occupy a marginal place in the interests of healthcare professionals and researchers. Indeed, they might require significant investment on research, which will then affect only a relatively small number of patients. Rare patients may face difficulty finding safe and effective treatments, as well as support from public or private health institutions. Within this scenario, they often engage experiential knowledge making practices, thus stabilizing an actionable body of knowledge grounded in their own everyday experience in managing health and illness.

This paper, by relying on a qualitative case study research, aims to investigate an Italian rare disease community of patients with cerebral palsy and their caregivers. The focus will be twofold. First, I wish to explore the ways this community shapes and is shaped by sharing situated experience of illness and care. By mobilizing the concept of "biosociality" (Rabinow 1995), I highlight how patients and their caregivers enact peculiar subjectivation processes enhancing the reappropriation of individual health agency to mitigate the power asymmetry with health researchers, professionals and institutions. Second, the paper will address the ways the community tries to influence and co-define both scientific research and the development of therapeutic options, focusing its effort on surfacing the peculiar needs of its members that are neglected by the prevailing therapeutic protocols and health professional. Overall, I will investigate the strategies and arrangements through which a body of lay knowledge and experiential expertise are build and put into action with the aim of questioning the predominant medicalized approach in managing cerebral palsy, thus promoting an "holistic" view over the illness experience that emphasize the importance of social, emotional, and psychological dimensions within the therapeutic process.

920"PARTICIPATORY AND CO-CREATION PRACTICES INVOLVING FIRST-PERSON EXPERIENCES TO IMPROVE HEALTHCARE SERVICES AND INFORM POLICIES: A CASE-STUDY OF ENDOMETRIOSIS AS AN UNDER-DIAGNOSED DISORDER AFFECTING WOMEN'S HEALTH"

Nora Salas Seoane (Science for Change) Rosa Arias (Science for Change) Diana Reinoso (Science for Change) Josep Perelló (Universitat de Barcelona) Ramon Rovira (Fundació de Gestió Sanitària Hospital de la Santa Creu i Sant Pau)

Endometriosis is an under-diagnosed disorder affecting women's health in which tissue similar to the lining of the uterus, the endometrium, grows outside of the uterine cavity. This can cause severe pain during the menstrual cycle, painful sexual intercourse, chronic pain, fertility problems, and psychological disorders such as depression and anxiety (Della Corte et al., 2020). The drama comes when looking at the statistics: Endometriosis affects 10-20% of women and girls in their reproductive age globally (WHO, 2021) and its diagnosis takes in between 8 and 10 years (Agarwal et al., 2019) - time during which women suffer serious consequences in their daily physical, psychological, social and professional spheres. Endometriosis is still surrounded by gender issues and social norms which have led to the creation of myths and misconceptions about a serious disease - affecting healthcare and policy in support and accompanying women with endometriosis. The Horizon Europe TRANSFORM project (Territories as Responsible and Accountable Networks of S3 through New Forms of Open and Responsible Decision-Making) is exploring new forms of local participatory decision-making within the so-called Smart Specialisation Strategies (S3) which entails sharing a common agenda among several and very different stakeholders. Within the Catalan Cluster (Spain), a Pilot to involve Women with Endometriosis has been developed using participatory and co-creation research practices to understand from first-person living experiences how women face the disorder and how their healthcare journey burden has been since their first symptoms began. Women's needs, concerns and recommendations to improve healthcare services and policies are co-created and conveyed jointly with Public Health Practitioners (Gynecologists, Hospital de Sant Pau, Barcelona), Researchers (OpenSystems, Universitat de Barcelona), AQuAS (Catalan Agency for Health Quality and Assessment) and Regional Authorities (Generalitat de Catalunya) to include women's voices which ultimately can improve healthcare services as well as inform policies.

996 CO-PRODUCING INNOVATION THROUGH FREE SOFTWARE AND OPEN HARDWARE: THE CASE OF "RASPIBO"

Sergio Minniti (University of Padova)

In recent decades, technoscientific practices have expanded the principles of openness and collaborative development from Free and Open Source Software (FOSS) projects to physical artifacts, giving rise to Open Hardware (OH) – an umbrella term standing for technical artifacts whose design is made publicly available through open licences. The spread of projects based on open informatics and electronics has been increasingly interpreted as a move towards the "democratization" of innovation, allowing participatory and horizontal organizational arrangements of R&D activities as well as processes of commoning. Yet, while participatory models

of innovation based on open digital technologies are broadly recognized as pivotal drivers in fostering the co-shaping of innovation, several critical issues regarding their effectiveness as alternative forms of innovation as well as their relation with R&D institutional settings still require further analysis.

In order to reflect on the challenges and tensions emerging from such co-production initiatives, the presentation offers some preliminary insights from an ongoing case study of an Italian informal group of practitioners – called “RaspiBO” – who support the “ethical” approach to technology developed by free software and open hardware movements, and who use open technologies to enable the participation of citizens as well as the involvement of public institutions in their innovation projects. The presentation relies on data collected from semi-structured interviews with practitioners and key informants conducted in Italy between 2021 and 2022.

Room N112 - Panel 033. FUTURES AND NARRATIVES IN HEALTH CARE POLITICS AND POLICY

Session 3

257 LOCAL TALES AND SPATIAL IMAGINARIES TO COMPOSE CARING REGIONS

Hanna Stalenhoef (Erasmus School of Health Policy & Management) Jitse Schuurmans (Erasmus School of Health Policy & Management) Iris Wallenburg (Erasmus School of Health Policy & Management) Roland Bal (Erasmus School of Health Policy & Management)

Over the past years, questions about governance of quality, efficiency, and financial sustainability of healthcare have become increasingly linked to questions of place (Oldenhof et al 2016, Ivanova 2020). One example of this trend is the so called 'regionalization of older person care' in the Netherlands, where regional collaboration is put forward as a solution to the growing problems of staff shortage and inadequate care quality.

In this paper we study how local tales and spatial imaginaries are invoked and reproduced in experiments reconfiguring regionalized care. We draw upon a large action-oriented research program we undertook between 2018 and 2021, with projects run in several geographical regions in the Netherlands. We observed that 'the region' is far from a clear-cut entity: the 'caring regions' emerge as an assemblage of diverse institutional actors, local tales, places, materialities which require continuous work of assembling to be made up into a caring geography (Schuurmans et al. 2020, van Pijkeren et al 2021, Lorne et al 2019). Within this assemblage of regional care, a variety of spatial imaginaries are invoked: 'collective understandings of socio-spatial relations that are performed by, give sense to, make possible and change collective socio-spatial practices.' (Davoudi 2018:101) These narratives tie into local geographies and identities, influencing how care ought to be organized in these places.

Our paper will exemplify how these spatial imaginaries can both aid and hinder collaborative solutions to local healthcare challenges: on the one hand, they can function as boundary objects (Star & Griesemer 1989), creating a sense of shared meaning which can aid the collaboration across different social worlds. On the other hand, when spatial imaginaries do not align with the experienced region, they hamper collaboration and regional caring.

225 CHANGING IMAGINARIES AND WORK-FLOOR PRACTICES: HOW ONCOLOGY CARE IN RUSSIA BECOMING A BATTLEGROUND FOR DIFFERENT HEALTHCARE LOGICS

Maria Denisova (Maastricht University)

Since the introduction of the compulsory medical insurance (CMI) program in Russia, citizens have a right to seek free-of-charge care across the country irrespectively of the place of residency. Patients, especially those with cancer, widely practice internal medical tourism to access adequate healthcare. It is because treatment opportunities such as access to chemotherapy or individualized treatment schemas are not equal across Russian regions. However, accessing healthcare outside of the residence region has been increasingly difficult due to the growing cases of hospitals' refusal to provide medical care to traveling patients. The responsibility for that can be partly attributed to conflicts between local insurance funds about the treatment reimbursement. Moreover, the Ministry of Health has recently introduced changes in the care procedures for oncology patients that further limited patients' movement for seeking care.
In this presentation, I examine the abrupt change in work-floor practices of insurance funds and new healthcare policies. Importantly this change was not mandated legally, but first occurred within the practices of local agents such as insurance funds and particular hospitals and regions. Therefore, I draw on the notion of sociotechnical imaginaries to understand how oncology care is imagined, practiced, and governed in today's Russia. Drawing on my ethnographic research of private clinics providing oncology care and their networks in Russia, as well as policy/media analysis, I will explore imaginative work done by healthcare governors, experts, and medical professionals to produce two different visions of healthcare. One is achieved through the solidifying bureaucratic logic in healthcare governance, while another relies on the human rights logic in which patient has the universal right to healthcare and can make independent decisions about a healthcare provider. In the presentation, I will uncover the routinized practices and narratives underlying these logics and their application to oncology care provision in Russia.

698 THE CENTRALIZATION OF MEDICAL DATA AS A MIRACLE CURE : DISCOURSES AND FUTURE VISIONS AROUND THE DIGITALIZATION OF THE BELGIAN HEALTH SYSTEM

Jean-Baptiste Fanouillère (University of Liège)

The Belgian state has a long history of attempts to centralize medical data. Since the beginning of the 1990s, several bills have aimed to organize the production, circulation and valorization of such data by setting up a centralized IT infrastructure that would interconnect all existing medical databases in order to bring data flows up to the federal government. These attempts, often denounced by representatives of both practitioners and patients, have given rise to various discourses and narratives aiming to (de)legitimize them. The actors working for or against these centralization processes have thus created new visions of the future, sometimes imagining a more innovative, fairer and more efficient health system, sometimes depicting, on the contrary, a health system corrupted by a private sector eager for profitability and a Big Brother state seeking to monitor its citizens, to the detriment of privacy and the quality of care. An intense struggle has thus been taking place between the State, professionals and the private sector for control of medical data, in which each stakeholder is trying to bring about an imagined future, according to their own interests and issues. In Belgium, the urgency of the pandemic and the supposed shortcomings of the health system have been the occasion to promote a new imaginary, that of a fully centralized health system doped with Big Data, where the coordination and intervention of professionals would be optimized thanks to the streams of data collected from both practitioners and patients. In this presentation, we aim to critically examine the various discourses and futures mobilized by these actors and their consequences for the Belgian health system. We pay particular attention to the political nature of these narratives, arguing that they are co-constitutive of social orders, and we draw on a series of interviews, and on foucaldian and STS literature.

Room N114 - Panel 042. DATA, ALGORITHMS, ABSENCE AND ALTERITY

Session 2

554 REPRESENTING ABSENCE IN SURVEY RESEARCH. A HISTORICAL AND CONCEPTIONAL ANALYSIS

Lukas Griessl (University of Essex)

In her classical study on representation, Hanna Pitkin defines representation as “making present in some sense of something which is nevertheless not present literary or in fact” (Pitkin 1967: 8-9). As one of several instances of representation, descriptive representation is, as the metaphor of the mirror and of arts suggests, the making present of something absent by resemblance. This form of representation is what guides sampling and and inferential statistics: To make an otherwise absent population present, in other words, to enact a population by means of representation.

While throughout the first half of the 20th century, random sampling became the dominant way to accurately representing a population by means of resemblance, increasing non-response has brought the issue of absence to the fore. Maintaining a sample while accounting for missing data becomes an increasing challenge and has put some of its major advantages into question, namely that knowledge about what makes a sample different from the population is not necessary. At least since the early 2000s, this brought about a re-evaluation of this very principle and led to an increasing appreciation for non-random sampling. This shift brings about a new paradigm of representation accompanied by a shift in thinking about absence. While traditionally, absences are avoided in giving each participant a known or equal chance of entering a sample, new forms of statistical representation aim at adjusting absences in retrospect, in subjecting data to models about how they differ from the population, rendering knowledge about absences crucial.

This paper aims to accomplish two things. First, in exploring the recent history of survey sampling, the paper investigates the role absence and ontological overflows play in the development of the discipline. Second, in discussing the notion of representation, this paper suggests an understanding of statistical practice as inherently concerned with rationalising absence.

514 AUTOMATED LEARNING: SPECULATIVE INTERVENTIONS

Kevin Witzenberger (University of New South Wales)

Following its promise to automate everything, Artificial Intelligence (AI) is hailed as a one-size fits all approach to every issue within education: From knowledge-production in the learning sciences, to the personalization of learning content, student success predictions and pre-emptive interventions in higher education, to managing organizational workflows and automating the work of teachers. Fuelled by these imaginaries and a desire for automation, universities precipitate the introduction of AI into decision-making at all levels.

This paper presents a speculative device to provoke new ways of thinking about automation in the context of learning. By taking the desire for automation serious, this contribution speculates about the future of learning, by ‘cutting’ together (Barad, 2014) technologies of automation. The result is a speculative device that pieces together emerging AI applications into a ‘learning machine’. Capable to produce its own essays, check them for plagiarism, mark them, and provide personalized feedback, the ‘learning machine’ illustrates the completion of an intensification of automated learning. To do this, this contribution utilizes a series of commercially available automation tools, application programming interfaces (APIs) to write and mark assignments, pre-defined marking rubrics and a simple spreadsheet.

In order to illustrate what rendered invisible in the process of automating a university, the speculative ‘learning machine’ acts as a provocative probe-head to foreground the instability, ‘not-yetness’ (Ross, 2017) of emerging technologies of automation. The aim of this speculation is not to arrive at vague ideas, but by starting from them to arrive at a particular point of view (Parisi, 2014). In the case of automated learning, it is the question of what the role of learning is the conditions of imaginaries of automation come true. The speculative methodology thereby neither empirical, theoretical or practical: It’s a thought experiment that prioritizes complexity over evidence and standards (MacLure, 2006).

513 ALGORITHMIC ACCOUNTABILITY AND THE POLITICS OF ABSENCE

Loup Cellard (Melbourne Law School)

In this talk I would like to sketch how introducing the concepts of absence, alterity and ontological overflows could help us rethink the current crisis of algorithmic accountability. FOIA requests, impact assessment, auditing formats and the other engineered techniques of accounting for algorithms are all stuck in the following theory of change: more algorithmic transparency will bring for democratic accountability and secure citizens' trust in the operators of algorithms. Problematically, this theory of change is rarely verified empirically. Adding absence, alterity, and ontological overflows will help us to point our attention to matters of concerns that are often neglected by STS studies and critical algorithm studies: the sense of paranoia and ambiguity surrounding the ontological manifestation of algorithms (are they present or absent from a given situation?); the socio-technical practices making algorithms visibly "absent"; the strategies to maintain ignorance around algorithmic agency (artificially creating absence and gaps in a shared algorithmic knowledge); and more broadly the aesthetics of secrecy forming visible and tangible manifestations of how algorithmic knowledge should be protected.

Some of the above under-studied issues might result from an operator of algorithm intentionally hiding algorithmic outcomes and effects. But if we are unsatisfied by current forms of algorithmic accountability might not only caused by orchestrated forms of impression management but also by algorithms' tendency to miss certain entities or treat properties of these entities as absent, silent or not worthy of consideration. A genuine and complete algorithmic accountability needs a form of self-description and reflexivity acknowledging the blindness and limitations of its accounting methods. In order to rethink algorithmic accountability in light of concepts of absence, alterity and ontological overflows, this talk will use the results of an ethnography of algorithmic accountability conducted in 2018 at the French open data task force Etalab (Cellard, 2020).

431 ALGORITHMIC IMPLICATURE

Sille Obelitz Søe (University of Copenhagen)

In this talk I will outline the idea behind the the concept algorithmic implicature – currently a metaphor for trying to understand that which is present without being explicit in the automated domain – i.e. implicit attitudes, intentions, assumptions, etc. The idea is to develop algorithmic implicature as a full-fledged concept based on investigations of absence and its relation to meaning, representation, and information, as well as investigations of absence-based inference. The focus on absence enables us to address 'that which is present without being present' in algorithms in ways that move beyond current ethical concerns regarding discrimination, bias, and unfairness.

The concept of absence has received plenty of attention within various strands of philosophy and is not in itself unacknowledged. Absence is absence. Its reality lies in its non-existence. It is neither an entity, an object, a state of affairs, nor a negative fact (Kukso, 2006). We have trouble defining it, yet humans are perfectly able to function and communicate even in the absence of data, information, or knowledge.

Further, we are capable of drawing absence-based inferences (Kallestrup & Pedersen, 2013) – i.e. we can reason in counterfactual terms inferring that ~p from the absence of evidence that p given that we are receiving reliable information about the domain (Pedersen & Kallestrup, 2013; Sober, 2009). However, the modelling of human decision-making for purposes of automation tends to focus on the information at hand, the present, the positive input and not on the information that is missing, the absent. This is the case with some of the newest advancements in AI regarding social intelligence (Bolander, 2019a) and the capability for judgement (Smith, 2019). Hopefully, the investigations of absence in decision-making processes will further our understanding of artificial intelligence and be especially beneficial in contexts of automated decision-making.

144 HETEROGENEOUS ABSENCES. THE MAKING OF ONE DIGITAL HEALTH

Lucilla Barchetta (University Cà Foscari of Venice)

This paper draws from the author's experience as a member of the wider ERC project "HealthXCross", and in particular as an ethnographer in a multi-disciplinary research consortium whose main objective is to operationalise "One Health" (OH) principles and approaches in the study and management of health risks at the human-animal-ecosystems interface. The final intention of this collective of scientists is to build a multi-disciplinary, open data repository for predictive modelling.
Using this ethnographic experience as an illustration, the paper develops an anthropological perspective on how OH can be reconfigured as a computational object through data reuse practices.

In this context, two distinct epistemic perspectives of ‘absence’ and ‘alterity’ are examined. One aspect refers to the opportunities and challenges involved in making data move from the sites in which they are originally produced to the sites where they are integrated with other existing data. The other pertains to the set of techno-scientific meanings attached to particular OH figurations, which are not intrinsic to data in and of themselves but rather are communicated and negotiated via the construction of the open data repository.

The idea that will be explored here is that the difference between these two perspectives is not of nature but of degree. Perpetual scientific and institutional barriers to data reuse and tensions regarding specific forms of interpretation and modelling raise challenges to making one digital health. The article argues that by looking at the slippages between whose health is 'datafied' and whose not could help understand not simply whose health becomes a matter of concern, but also examine how scientists construct the object of study itself, that is OH, via big and open data.

83 OVERLOOKED DATA: THE PROMISES AND LIMITATIONS OF FERTILITY TRACKING TECHNOLOGIES

Alina Geampana (Aston University)

The femtech industry, which includes digital products, software and devices aimed at improving women’s health, has skyrocketed in recent years. Fertility tracking technologies (FTTs) constitute one of the largest segments of this market. Millions use these to track their fertility and obtain algorithmic predictions about their fertile windows. As a result, FTTs manage and generate an unprecedented amount of user data. However, these data occupy an ambiguous space in terms of their use, diffusion and importance. Moreover, FTT data uses are entangled with concerns about privacy, medical accuracy and a lack of inclusive design. Drawing on the emerging literature and key regulatory and media documents, this paper highlights ongoing debates about the development and use of FTTs. It also explores the opportunities that fertility data might afford – opportunities that have yet to be realised. Furthermore, I propose that scholars pay attention to fertility data infrastructures through the use of socio-technical analytic frameworks that can better capture the interconnections between developers, users, medical professionals and fertility data. In doing so, I aim to contribute to discussions about the increased use of commercialised digital health technologies and their consequences – both intended and unintended.

Room N109 - Panel 054. ENVISIONING CODED FUTURES: ALGORITHMICALLY SHAPED PRESENTS AND FUTURES OF HUMAN-MACHINE-RELATIONSHIPS

Lina Franken (LMU Munich, Department of Sociology)
Maximilian Jablonowski (University of Zurich, Department of Social Anthropology and Cultural Studies)
Libuše Hannah Vepřek (LMU Munich, Institute for European Ethnology and Cultural Analysis)

Interacting with the world today increasingly means dealing with sociotechnical systems that fundamentally rely on binary code. Computer code shapes ways of communication and travel, the very bedrock of the global economy and related infrastructures. While code (at least today) is written by humans or human collective practices, there already exist attempts to build AI systems that take over coding themselves, moving today's discussions on coded sociotechnical assemblages and human-machine relationships to the next level. At the same time these practices of envisioning influence and shape today's politics of the future.

With sociotechnical imaginaries (Jasanoff/Kim 2009) not only questions of what is possible, but also visions of "how life ought, or ought not, to be lived" (Jasanoff 2015: 4) are being discussed. In the center of this we find questions on what human-machine relationships should look like and how decision-making power should be distributed across these sociotechnical systems. Expert think-tanks, venture capital, industry, lobby groups or consulting agencies play important roles in steering today's debates of the future coalescing with buzzwords such as digital capitalism, industry 4.0, algorithmic power and surveillance capitalism.

The prevalence of coded sociotechnical assemblages raises important questions on human-machine-relationships and responsibilities of the future for STS research, such as: How does computer code shape the inter- and intra-actions of a world in constantly becoming and how will algorithms vice versa be shaped by our own viewpoints and actions? What does this mean for negotiations of human-machine-relationships of the and for the future? How do we and will we interact with code-based and algorithmic nonhuman actors? These collaborations and entanglements give rise to changing responsibilities and obligations. How are human biases reproduced (or even reinforced) within human-machine relationships and more-than-human coding practices? Which power relations as well as formal and informal ethics are in play here and how is decision-making and control distributed across sociotechnical systems? On the material level questions of what relevance do (digital) infrastructures of heterogeneous materiality have in these settings arise. Which socio-spatial configurations will be engendered and how will human and more-than-human actors move through them? And finally, regarding methodology as well as ethics, how can STS scholars research these infrastructures, spaces and entanglements?

The panel will focus on the envisioned, sometimes speculative human-machine-relationships of coded futures. It aims at carving out the possibilities and pitfalls that more-than-human collaborations engender within these relationships. We invite contributions ranging from case studies to theoretical considerations of the future politics and imaginaries of coded human-machine relationships.

Session 1

789 EXPLOITING YOUR AI? NEGOTIATING PERFORMANCE, SATISFACTION AND ACCOUNTABILITY IN HUMAN-AI-RELATIONS

Migle Bareikyte (University of Siegen) Marcus Burkhardt (University of Siegen) Shadan Sadeghian (University of Siegen)

AI today is widely seen as the main driver of technological innovation that is expected to displace or even supersede human work in the near future. While this development is regarded as a beneficial increase in efficiency by many experts, others warn about the societal and individual consequences. The design of future human-AI-relations needs to acknowledge, negotiate and balance the tensions between the goals of technological performance, individual satisfaction and accountability. Based on the intuition that there cannot be a universal solution to this tension, we conducted an expert workshop with an attempt to develop a framework that enables situated exploration of potential human-AI-cooperation in different contexts. We brought together 12 white-collar workers from the media, engineering, business and academia in Germany to share their experiences and future imaginaries of AI. Despite the widespread use of algorithmic systems in today's digital environments (see Google Search, YouTube, etc.), we observed that participants had very different perceptions of when algorithmically-driven systems should be called artificial intelligence. Also, when asked to envision the human-AI-relationships in future workplaces, participants predominantly voiced imaginaries of person-like AI-technologies that are

subservient to human actors and take over undesired tasks, act as assistants or serve as digital doubles. Based on an analysis of the participants' contributions, in our talk we present the first results on when AI becomes AI, and the imaginaries associated with it. In particular, we examine narratives about empirical and desired forms of AI as well as societal expectations of AI (e.g. AI Winter 2.0, hyper-neoliberalism, etc.) in order to develop a critique of AI that focuses both on its socio-political evaluation and design practices. Such a critical exploration of AI imaginaries is a step towards a further analysis of the development of AI that addresses societal, economic and design tensions.

736 "TOM AND THE SMARTPROJECTORLAMP" – ON ENVISIONING USAGE PRACTICES IN CODED HUMAN-MACHINE RELATIONSHIPS IN THE FIELD OF AUGMENTED REALITY TECHNOLOGY

Sarah Thanner (University of Regensburg)

When introducing his idea of the DigitalDesk in 1993, Pierre Wellner envisioned the separation of the physical and the digital world at the workplace soon to be overcome. Embedded in influential socio-technical imaginaries (Jasanoff/Kim 2009) of the 1990s, such as "ubiquitous computing" (Weiser 1993), he presented a camera-projector-system allowing interactive digital content to be directly projected onto the surface of a table as well as physical paper sheets.
Almost 30 years later, the widespread use of interactive tabletops in everyday life contexts has mostly remained a vision and research into interactive tables a niche topic in computer science. However, in the process of the continuous recycling of visions of techno-futures emerging since the 1990s (Hong 2021), today, the question of who or what can serve as an interface or input device has become an open space of possibility.

With advances in the field of hardware development and sensor technology, e.g. the availability of high-resolution laser projectors as well as the field of computer vision and AI, the interactive table, too, has once again returned to the research agenda.
In 2019, computer scientists working together on the research project VIGITIA, funded by the German Federal Ministry of Education and Research, set out to develop practical solutions to "support and enrich" (Wimmer/Echtler 2019) everyday life activities on tables via the use of projected augmented reality technology.

In my contribution, I want to investigate the human-machine relationship envisioned in the VIGITIA project as part of a socio-material assemblage of knowledge and future making practices entangled with digital-material infrastructures and raise the question of how the notion of the user and usage practices are performatively produced. To this end, I draw from ethnographic material of my ongoing PhD project, in which I collaboratively engage with the computer scientists working on the VIGITIA project.

469 INVERSIONS OF HUMAN-MACHINE RELATIONS IN HUMAN COMPUTATION SYSTEMS

Libuše Hannah Veprek (LMU Munich)

The AI research field of Human Computation (HC) aims to create systems that fill the space between what humans cannot achieve alone and what computers cannot (yet) do. Instead of pushing the limits of pure machine intelligence, HC aims at developing hybrid intelligence systems consisting of humans and machines working together towards a joint goal. With this idea of "hybrid thinking systems" (Bowser et al. 2017), HC advocates envision how human-machine, or, more precisely, human-AI relationships, ought to evolve to create desirable futures.

Based on ethnographic fieldwork on HC-based citizen science games, this paper traces the lines of human-machine relationships in human computation systems (HCS) in their ongoing development and how these relationships are being imagined.

With the example of the case studies Stall Catchers and Foldit, this paper argues that HCS can be understood as laboratories of new human-machine relationships where role allocations and decision-making power are continuously modified and adjusted. The machine's role shifts over time from the part that needs assistance over controlling instances to providing assistance itself.

While both projects started from the need to include humans in the loop to solve a problem for which there didn't exist any computational solutions – in the case of Stall Catchers to analyze Alzheimer's disease research data and in Foldit's case to predict and design protein structures – they recently started experimenting with the interactive incorporation of AI-methods into the human-machine relations to push the project's overall capabilities

even further. With the integration of DeepMind's Alphafold 2 (Jumper et al. 2021) – whose training data in turn includes structures sourced via Foldit – into Foldit or the introduction of AI-bots into Stall Catchers, human-machine relationships in HCS seem to be inverted, entering a new form of collaboration and renegotiating responsibilities across the sociotechnical system.

Room N108 - Panel 055. INFERENCE WORLDS: POLITICS OF MACHINE LEARNING FUTURES

Session 2

335 DEMOCRATIC POLITICS OF MACHINE LEARNING

Yu-Shan Tseng (University of Helsinki)

This paper investigates how machine learning reconstitutes democratic imaginaries and practices in terms of national 'rebranding' and political participation. It focuses on a digital platform called 'vTaiwan', a civic platform which practitioners see as a pioneer in new forms of digital democracy. I argue that the democratic politics of machine learning is a dynamic tension between new openings and foreclosures, which unfold in algorithmically-mediated democratic imaginaries and practices.

The vTaiwan platform, via innovative usage of PCA and K-means machine learning, effectively opens up new possibilities for a young democracy like Taiwan to claim a leading position in the present and future of digital democracy. Machine learning becomes an effective tool for reimagining Taiwan as a strong democratic state, particularly in terms of the contrast with the authoritarian Chinese state.

The Taiwanese government harnesses the machine learning of vTaiwan to imagine a consensus-oriented form of digital democracy which is embedded within wider policy-making processes. vTaiwan's machine learning transforms how users experience political participation into an intensively gamified, excited and highly relational process. It reclassifies users into different visualised groups based on how they vote on discrete issues such as the legalisation of Uber. Users are displayed on the UI as avatars, dwelling within or moving between specific opinion groups as they vote on different comments. The visualisation of these opinion groups allows different perspectives on political issue from opposing groups with different opinions to be viewed in relation to one's own opinion.
However, vTaiwan's machine learning is prone to various foreclosures, such as glitches and external political manipulation which calls into question vTaiwan's vision of a new form of consensus democracy. These foreclosures shut down vTaiwan's pathway to democracy, which however emerges elsewhere in urban space. Machine learning for democracy is about regaining openings from foreclosures in digital-urban space.

834 LEARNING FROM HATE: INFERENCES, INTERFACES, AND THE FORECLOSURE OF COUNTER-NARRATIVES

Eva Haifa Giraud (University of Sheffield) Elizabeth Poole (Keele University) Ed de Quincey (Keele University) John Richardson (Keele University)

In the wake of 2016's wave of victories for right wing populist agendas, a raft of academic research sought to make sense of why these events occurred. Wider political allegations that social media were responsible for political developments, through creating filter bubbles and destabilizing shared norms, resulted in social media companies calling for academic input in creating tools to identify, govern, and counter extreme speech. Correspondingly, in fields ranging from computer science to media studies and psychology, researchers turned to machine learning to develop these interventions. Uses of social media data in developing algorithmic responses to hate speech, however, have been accused of framing complex racialized inequalities as problems that can be resolved through technofixes (Matamoros-Fernandez and Farkas 2021). In particular, there is concern that hate speech data used in machine learning can reproduce a vision of social media (and the social itself) that is divided along religious, national, and ethnic lines (Nikunen, 2021), while foreclosing more complex understandings of platforms as socio-technical interfaces that demand situated interventions.

This paper draws on data from a longitudinal project on the emergence of counter-narratives against online Islamophobia, which emerged in the wake of political 'trigger events' (Awan, 2014) between 2016-2021. It focuses on three challenges that emerged when critically engaging with sentiment analysis as a machine learning tool in the context of hate speech research: categorization (the challenge of classifying counter-narrative data), contexts (the challenge of drawing inferences from data in contexts where attempts to combat hate speech inadvertently perpetuate it), and reproducibility (the challenge of negotiating technical changes in how platforms manage data). The paper uses these issues to reframe machine learning in line with STS conceptions of 'interface methods' (Marres and Gerlitz, 2016), and ask what political possibilities such approaches foreclose – or create – for intervening in online hate.

1006 THE POLITICS OF DATA REUSE: ENTANGLED ECOLOGIES IN MACHINE LEARNING INFRASTRUCTURES

Nanna Bonde Thylstrup (Copenhagen Business School) Louise Amoore (Durham University) Kristian Bondo Hansen (Copenhagen Business School) Mikkel Flyverbom (Copenhagen Business School)

Data reuse is a crucial infrastructural arrangement for deep learning algorithms. At the same time, however, data reuse architectures have been shown to be problematic, entailing, for instance, algorithmic bias and exploitation of data subjects.

This article argues for a broader engagement with the politics of reuse in machine learning systems. Existing public and scholarly debate surrounding reuse predominantly focus on the data itself: which data is used, how is it reused, and for what purposes. In contrast, this paper examines reuse as a relational unfolding between data, models and more-than-human environments. Developing the notion of reuse entanglements and drawing on empirical examples from infrastructural arrangements for deep learning algorithms in Danish and British public sector, we bring the concept and practice of data reuse into conversation with Karen Barad's work on entanglement and Sara Ahmed's work on the power relations of use and reuse. In doing so, we shift focus from linear discussions about data input and output (and attendant distinction between use and reuse) and unto a critical examination of the non-linear relationality of (re)use. First, this approach offers crucial insights into why oft-used ethical gestures, such as data deletion, tend to fail as stand-alone solutions for data violence. It secondly opens broader theoretical approaches to the emergent and non-linear futures of deep learning arrangements.

197 SUPERVISED LEARNING OF THE MECHANICAL SUBJECT: UNDER THE RADAR SOCIAL ENGINEERING TECHNIQUES IN BENJAMIN NETANYAHU'S FACEBOOK MESSENGER CHATBOT

Anat Ben-David (Open University – Israel) Elinor Carmi (City, University of London – UK)

This presentation discusses the application of machine learning logic in politics. We argue that political parties reverse the roles of operator/algorithm to engineer mechanical political subjects, whose behaviour can be predicted, governed and surveilled. Focusing on the former Israeli prime minister Benjamin Netanyahu's use of a Facebook's Messenger chatbot during the 2019-2020 election cycles, we show how the bot (the operator) applied supervised learning methods to engineer voters' actions (algorithms).

Principles of supervised learning include labelling a pre-defined dataset, training algorithms to find patterns in the data, and inducing models to predict future output (Cunningham et al., 2008). Similarly, Netanyahu's chatbot relied on external voter profiling, training people who interacted with the bot, and subsequently activating those identified as supporters to canvass others and report back to the system on other people's political views.

Using the 'walkthrough method' (Light, Burgess & Duguay, 2018), we systematically map Netanyahu's chatbot features and content to identify its intended purpose and ideal uses. Further, we analyse the rhetorical techniques by which the chatbot automated desired mechanical subjects through repetitive messaging, training and habituation. Our findings show that the campaign used targeted advertising to 'lure' voters into interacting with the chatbot, leading them to believe they are chatting with the Prime Minister. Subsequently, the bot asked them directly about their voting intentions. Through games, quizzes and automated conversations, the bot trained those who interacted with it on ways to think about current issues and to smear political rivals. Finally, the bot provided people it identified as supporters with conversation scripts and dialling buttons, and requested them to call individuals and report back on the individual's political views. Put differently, the campaign used the chatbot to supervise people's learning, ensure they think in the 'correct way' about Netanyahu and influence their peers accordingly.

Room N111 - Panel 057. DATAFICATION GOES MATERIAL: DIGITAL CAPITALISM AND THE MATERIAL CONDITIONS OF EXISTENCE

Session 2

468 WHO IS (REALLY) PRODUCING ARTIFICIAL INTELLIGENCE (AI) ? EXAMINING LABOUR PROCESSES BEHIND FRENCH COMMERCIAL AI SYSTEMS

Le Ludec Clément (Institut Polytechnique de Paris / Télécom Paris) Cornet Maxime (Institut Polytechnique de Paris / Télécom Paris)

Following the recent raise in funding in artificial intelligence systems, a research program emerged on AI systems effects' on users and on the conception of these systems (Eubanks, 2017). Meanwhile, a « digital labor » research program both reported on the development of new forms of "free labour" and "platformization" of work (Scholz, 2012). At the intersection of the two, research on « micro-work » - a labour process for data collection and annotation - showed that AI companies are relying on digital labour platforms proposing short and low-paid tasks to an independent workers' crowd, often situated in the Global South. These activities being essential to produce "ground truth" data, on which AI models rely. While many papers investigated working conditions on micro-work platforms, global approaches of the relationship between the production chain and data labour processes remain under-researched.
Following the idea that we need to focus"on documenting the human choices made in the work process surrounding AI" (Bechman and Bowker, 2019), we propose an analysis of data-work through the lens of the whole French AI value chain. Beyond the materiality of AI infrastructures (i.e data processing and hosting), we investigate the extent of the role of data workers: who is really producing AI?

Drawing on interviews conducted with French AI start-ups (30), data annotation companies executives (6) and data-workers located in Madagascar (28), we show how French AI companies are building their models relying on the extraction of Global South workers' cognitive labor, as well as end-users' data. Focusing on data-work practices, we show that the AI promise of getting "something out of (apparently) nothing", is actually relying on the continuous input of human labour throughout the production chain, defining AI systems as articulations of human work. Data workers are therefore being given a prominent role in both models "problematisation" and data "classification".

717 INFRASTRUCTURES OF ARTIFICIAL INTELLIGENCE: TRACING THE NETWORK OF MATERIALS THAT MATTER

Miguel Larrea Schindler (UAB-STSb y ESDi-URL) Miquel Domenech Argemi (Universidad Autónoma de Barcelona)

Since the end of the last century, the creation of non-human intelligences has taken center stage at the techno-scientific and industrial level (Buchanan, 2005; Haenlein, 2019; Natale, 2020), reconfiguring the world of things and the modes of government of social life. Contemporary studies on the field of A.I focus on the applications of A.I in the most diverse fields, the most prominent being health (Dey, 2019; Randhawa, 2020), neurosciences (Hassabis, 2017) and optimization of industrial processes (Glauner, 2020). From the social sciences, the ethical dimension has been studied mainly from a discursive perspective (Star, 2002). But A.I is not abstract at all. Rather, it is its physical, material and concrete dimension that is changing the world (Crawford, 2021). Here, we intend to study A.I no longer in its "soft" dimension, but in its "hard" materiality, shifting the focus from the consequences of software to the impacts of hardware. We start from the hypothesis that A.I is an extractive industry and its modes of production have consequences at an ecological level - its condition of possibility being minerals such as Lithium and the REE - and at an informational level, as data mining is the raw material to generate value from this industry (Crawford, 2021). Following the trajectory of the materialities that articulate and make AI possible, we analyze, based on a case study (lithium mining in Extremadura, Spain), the consequences in two areas: the environment (Dauvergne, 2020) and labor (Corvalan , 2019). Based on an ethnography of infrastructures inspired by the thought of Susan Leigh Star, we intend to take a sensitive look at the effects (and possibilities) that the material dimension of A.I has for the construction of a more sustainable world.

458 FEMINIST ETHOS UNDER DATA PRODUCTION PRESSURES

Mace Ojala (ETHOS Lab, IT University of Copenhagen) Merethe Riggelsen Gjørding (ETHOS Lab, IT University of Copenhagen) Pedro Ferreira (ETHOS Lab, IT University of Copenhagen)

ETHOS Lab located within the IT University of Copenhagen is committed to feminist values in researching and teaching STS. Offering the lab as a site for supervision, workshops and consulting in Digital Methods , we receive frequent requests to harvest and provide data from social media platforms. While being engaged in knowledge production is a given for the lab, we occasionally feel a sense of ambivalence, unease and even resistance towards handing over datasets and data files we've collected and leaving it in the hands of others. What kind of data ethics do we find ourselves involved in?

We will present a comparison of two models developed at the lab: ”read-and-agree-to-comply” and ”read-and-assess”. We draw from interviews with colleagues to whom we provided data, focusing on the lives of these data post-handout. This constitutes part a broader effort to reconcile the lab's commitment to feminist values with production imperative and materialities of potentially creepy data (Shklovski et al. 2014). Our aim is to generate accountable practices, guidelines and conversations between ourselves, our students, our colleagues and users of social media that are both responsible, reasonable as well as practical. We seek to avoid "ethics washing" and what Sarah Ahmed has identified as production of irrelevant compliance documents (2007). For guidance we draw on Nissenbaum’s framework of contextual integrity (2010) and d'Ignazio and Klein's data feminism (2020). Our aim is not to build critical distance to data work, and marginalize and disengage the lab from the ethico-onto-epistem-ologics of knowledge production (Barad 2007) by rejecting data collection requests – at least not yet – but rather to gradually, collectively, relationally and carefully strengthen and deepen both qualitative and quantitative research conducted in a data-heavy social sciences research environment.

47 DIGITAL CAPITALISM, DATA, AND DEMOCRATIZATION IN AGRICULTURE. GLOBAL PATTERNS AND EMPIRICAL INSIGHTS FROM GERMANY

Hackfort Sarah (Humboldt-Universität zu Berlin (Humboldt University))

This paper addresses the nexus between digital technologies and power in the agri-food system and explores possible avenues for a democratization of power relations. I argue that digital technologies in agriculture globally reproduce existing patterns of power including corporate control over technology development and over global food commodity chains. At the same time digitalization introduces new forms of control and value extraction based on the use of data through large tech companies that enter the agri-food sector. Thus, digital capitalism is obviously shaping the agri-food system and reproducing forms of corporate ownership and control over data and technologies as means of production.
Nevertheless, I also show that there are initiatives and social movements that try to (re)gain sovereignty over food and agricultural technology and data and build more democratic alternative to corporate solutions. Some of these initiatives are investigated in their potential to democratize power relations in the agri-food system. With a focus on Germany as a case study, opportunities, and limits of emerging ‘digital emancipatory alternatives’ are explored. These include organic farmers’ associations or community supported agriculture. The paper analyzes their discursive ‘frames’ as well as their material ‘digital practices’ and discusses the existing political, legal and institutional conditions for a democratization of power relations in the agri-food system.
Methodologically the paper is based on an extensive literature review and a qualitative content analysis of interviews. It contributes to STS in bringing together debates from political economy and critical agrarian studies with critical data studies. It also links the study of science and technology with approaches of critical policy studies using critical frame theory.

165 MAKING PLANT PATHOLOGY AUTOMATICALLY RECOGNIZABLE

Heimstädt Cornelius (Center for the Sociology of Innovation (CSI), Mines ParisTech)

The study examines how a digital agtech startup develops image processing algorithms (deployed in a mobile application for small-scale farmers) meant to automatize the diagnosis of plant pathological problems based on visual data. Rooted in classification theory and critical algorithm studies, the paper theorizes the construction of these allegedly automatic tools as a process that crucially depends on human classification work. Drawing on ethnographic observations and qualitative interviews, the study traces the development process of the startup’s image processing algorithms from the field, over the computers of the company’s software engineers, to the mobile devices of its users. The study identifies five different layers in this development process (defining problems, collecting data, labelling data, training models, displaying results), and describes how the classification work that is carried out at each of these layers enables the startup’s algorithms to classify some plant pathological problems, while neglecting others as a concomitant effect. Overall, the study contributes to debates about the material effects of the increasing datafication of agriculture, by interrogating how a venture-capital backed

company developing a mobile application comes to define what counts as plant pathological problem and what does not for a growing number of users.

Room N116 - Panel 068. DEBATING THE HERMENEUTIC CRITIQUE OF TECHNOSCIENTIFIC FUTURES

Session 2

181 ANTICIPATION AS AN EMANCIPATORY TOOL? "FUTURES LITERACY" AND THE CRITICAL-HERMENEUTIC APPROACH TO TECHNOSCIENTIFIC FUTURES

Sergio Urueña (Norwegian University of Science and Technology & University of the Basque Country UPV/EHU)

The last two decades have been particularly fruitful in identifying the role of future representations in co-shaping science, technology, and innovation dynamics. On the one hand, representations invoking the future (e.g., visions, sociotechnical imaginaries, promises, expectations) have been shown to anticipatorily influence current practices by mediating sociotechnical meanings and colonizing our future dispositions. On the other hand, various normative approaches urge anticipation as an operative dimension to foster reflexivity in technoscientific co-production processes (e.g., technology assessment, anticipatory governance, responsible innovation). However, this reflexivity can vary in its radicality and be applied to certain aspects (and not to others).
Against this background, this paper aims to problematize the limits and possibilities of the critical-hermeneutic approach. In particular, I will argue that the role of the critical-hermeneutic approach should be understood not only from a reactive-interpretive perspective (which focuses on interpreting technoscientific futures as cultural expressions of the present), but also (and especially) from a proactive-interventive one (which focuses on critically opening up the empirical and normative framings and material practices that ground technoscientific futures). If the critical-hermeneutic approach is to become an emancipatory tool, it is a necessary-though not sufficient-condition to move beyond the paradigm of "self-understanding" to a paradigm of "capacity-building." This last paradigm, which focuses on strengthening critical capacities in the face of the colonization of technoscientific futures among various social actors, brings the critical-hermeneutic approach closer to the rationale of what is typically referred to in anticipation and futures studies as the "futures literacy" approach.

918 EXAMINING COBOT FUTURES: BETWEEN CRITICAL ANALYSIS AND CONSTRUCTIVE ENGAGEMENT

Jesse de Pagter (TU Wien)

This contribution is based on the author’s participation in a publicly funded project aimed at the democratization of collaborative industrial robots by introducing them to a makerspace. Collaborative robots (cobots) are a type of robotic arms that users can collaborate with in a safe manner. Whereas they are mostly developed for manufacturing purposes, the goal of this project is to make them available more broadly. For that reason, collaborative robots are introduced to a makerspace, which enables public access to the cobot, as well as much more creative use cases compared to manufacturing settings. The project facilitates the cooperation between professional robotics researchers and makerspace members.

At least partly due to the rising attention for societal and ethical issues around robots, the skills of ethicists and social scientists are increasingly considered useful in such projects. They have the difficult task to analyze and criticize different practices around a specific technology on the one hand, while on the other hand engaging in the active exploration of the sociotechnical potential of that very same technology. The question is how those two tasks can be combined in order to constructively engage in the development of alternative future imaginaries.

The presentation’s contribution can be found in three different aspects. First of all, it asks how the role of social scientists and ethicists can be developed in new ways so as to engage in this critical assessment of new (robotic) futures. Second, it elaborates on the (methodological) tools philosophers and social scientists can use to participate in such projects. Both STS-methodologies as well as ethical/philosophical work are considered in this regard. Finally, but crucially, the goal is to search for new ways of engaging with technological potential, through the development of (speculative) anticipatory concepts that can help to develop new, inclusive notions of sociotechnical potential.

616 MECHANIZATION, MACHINE AGENCY, AND THE FUTURE OF WRITING AS SELF-CRITIQUE: TOWARDS AN EXPANDED HERMENEUTIC APPROACH TO TECHNOLOGY ASSESSMENT

Nikita Lin (Karlsruhe Institute of Technology, Institute of Technology Assessment and Systems Analysis)

Initiated and headed by Dajuin YAO, the Taiwan-born artist, art historian, philologist, philosopher, and entrepreneur, the so-called 未來書寫小組, or Group of Futurist Writers (GFW; variants for Futurist include Futurological, Firewalled, Feedback, Formula, Fantasmagoric, Fonocentric, etc.) is an ongoing experimental project which combines teaching, research, studio and curatorial practices, exhibitions, among others, at the Open Media Lab (OML), China Academy of Art (CAA) in Hangzhou, China. While the OML is dedicated to interrogating the limits and potentials of media technologies, both analogue and digital, through a wide spectrum of artistic activities, the GFW specifically draws upon the deep-time layers of Chinese language and its unique writing system, in particular with an interest to critically engage in dialogues with political and intellectual disruptions in the 'age of mechanization' (and now of algorithms) brought by the invention and innovation of technical objects (e.g. typewriter) and technical systems.

In a nutshell, the artistic and creative approaches, values and visions that the GFW develops and advocates towards technologies (both outdated and emerging) combine and further expand at least two critical elements found in the hermeneutic tradition: 1) What Hans-George Gadamer called the 'merger of horizons', echoing an innovative 'prospective archeology' formulated by the media theorist Siegfried Zielinski, through which the artwork acts as a 'generator of surprises' across different cultures, convening the past, present, and future; 2) A 'defamiliarization' process in the aesthetic experience - the tension sustained between expectations/illusions and the potential violation of excitement (Wolfgang Iser), critique of the political unconscious (Maxist aesthetic, Fredric Jameson), and more importantly self-critique (W.J.T. Mitchell). With an view to technology assessment, this paper will articulate why and how an expanded hermeneutic approach is made possible through the initiatives and practices of GFW in response to the third and the fourth questions raised in the panel.

756 WHAT IS THE THING CALLED "FUTURELESSNESS"?

Martin Sand (Delft University of Technology, Department of Values, Technology and Innovation)

In the 1980s, Leszek Kolakowski declared the "death of utopia" (Kolakowski 1982) and many prominent authors concurred with his analysis (Habermas 1994). This view on utopia combined both descriptive and normative theses: The descriptive thesis suggested that people started considering neoliberalism as a system without alternatives. The normative thesis suggested that it is reasonable, given the violence of right- and left-winged utopias in the 20th century, to accept liberalism as the best form of political organization. Other authors, however, went further and suggested not only the end of utopia, but the end of the future (Thornton 1991, Lowenthal 1992). This view stands in the centre of a bourgeoning debate about the sociology of futurelessness. In my presentation, I will present an overview and critical analysis of this debate. Whether we can concur with the thesis that the future is dead depends on a) whether we accept the empirical claim. Clearly, mundane futures remain widely prevalent (Sand 2019) – in this sense, there are plenty of futures. Further evidence to the contrary seems to be provided by the surging number of technological visions that aspire to reinvigorate the utopian energies in the 21st century (Saage 2016). Whether we accept those as heirs to the political utopias of the 20th century depends on their subversiveness. Some do indeed, as Saage suggests, envision radical change within the reigning socio-economic order – others, however, envision radical socio-economic change through technology. Accepting that the death of the socialist utopia initiated effectively the death of the future, further depends on b) a conception of liberalism as a realistic political theory. One, however, can maintain that the liberal project too is substantially utopian in its aspiration. My presentation is therefore both an endeavour in social philosophy as well as in the hermeneutics of present futures.

213 CULTURAL SEMIOTIC REFLECTIONS ON THE HERMENEUTIC APPROACH TO TECHNOLOGY ASSESSMENT

Paulina Dobroc (Institute for Technology Assessment and Systems Analysis (ITAS)/ KIT)

Today, even if the reference to the future is understood as a phenomenon of modernity, it is referred to in the political, cultural but also scientific debates with little critical view on the reference to the future itself as a meaning-giving reference. Rather, the critical questions go in the direction of, for example, questioning the representation of society as a whole in the future visions, that is, reflections on the content of the future reference. But what about the form of the reference itself? Is the reference to future a historical reference and what other meaning-giving references are there?

In my dissertation project I defined visions as one of the possible cultural techniques of self-invention of human beings. Cultural techniques are media, which presuppose the network and become cultural techniques in the network-building process. They operate in networks as rule drivers. The modern cultural technique approach,

following on from the findings of Actor-Network Theory, allows me to explain the role of future visions in networks. Furthermore, the reference to the philosophy of Ernst Cassirer and the semiotics of Charles S. Peirce provide a reflection space on the symbolization process within the technical symbolic order, in which future visions play a crucial role.

The theoretical approach I developed in my dissertation project provides a way to abstract the reference to the future and to discuss it as one of the ways humans create meaning. As a concept that further thinks the approach of Vision Assessment, possibilities and limits of the hermeneutic approach of Vision Assessment are discussed. Referring particularly to Peirce's inference theory, I will discuss the involvement of Vision Assessment in the culture it reflects, while also outlining why Vision Assessment can nevertheless approach critical reflection on visions.

Room N110 - Panel 069. THE TIMES OF MAINTENANCE

Jérôme DENIS (Centre de sociologie de l'innovation - Mines ParisTech)
David PONTILLE (Centre de sociologie de l'innovation - Mines ParisTech)

As they consist in carrying out for the preservation of things and cultivating their endurance, maintenance practices are a matter of time. Yet, they contrast significantly with most future-oriented technoscientific activities and, more generally, with the modernist innovation-centric timescapes (Jackson, 2016; Puig de la Bellacasa, 2015; Schabacher, 2021). Rather than organizing the world by designating a desirable future, the care of things deals with continuity. It turns duration into a matter of concern. This has importance consequences. First, this concern for continuity translates in an irreducible presentism which is notably reflected in the quiet mundanity of recurring cycles of interventions. Predictive, preventive or curative, maintenance is a repetitive ongoing activity, with no expected end. Second, the quest for durability implies a relationship to time which goes beyond what constructivist approaches of temporality generally emphasize. Maintainers, indeed, do not simply "construct" time. They shape duration by composing with, and sometimes explicitly struggling against, the "time of matter" (Barad, 2013), which they experience in different manners and confront to a range of alternative temporalities, such as biographical or organizational ones (Cohn, 2016). In other terms, time is not so much produced or constructed in maintenance practices as it is problematized and negotiated.
This panel aims at investigating these two aspects by exploring the various ways maintenance concretely enacts duration. From heritage conservation to industrial maintenance, ecological preservation and domestic mending, humans' participation in the continuity of things can take diverse forms and is organized in configurations in which both the pace of maintenance and its temporal horizons differ, sometimes dramatically. In order to examine and better understand these differences, the expected papers will be grounded on a rich empirical material, attentive to the singularity of each situation, and may address the following themes, among others:

- How does the multiplicity of times unfold in specific maintenance settings (the times of materials, of organizations, of markets… or planet Earth). How are these different times combined, kept apart, or hierarchized? To what tensions and confrontations does their copresence give rise?
- How are the times of maintenance (and especially the time of the materials things are made of) experienced, measured, and/or organized? What kinds of instrumentation are at play in these processes?
- What kinds of knowledge are elaborated about the rhythms of maintenance and the temporalities of matter? What epistemologies do participate in the problematization of time in maintenance?

Exploring these questions, the panel aims at further understanding the ways in which time is treated as a concern and matter of care in maintenance, and how humans get attached to things in this process, dealing with the always changing composition of their material world.

Session 1

922 MAINTAINING FUTURES OF ABUNDANCE AND LOSS: AGROBIODIVERSITY CONSERVATION IN THE SVALBARD GLOBAL SEED VAULT

Franziska von Verschuer (Goethe University Frankfurt am Main)

One of today's increasingly existential yet conspicuously underrecognized global ecological problems is the loss of diversity in agricultural plants. Maintaining diversity in seed banks has become the key international agropolitical answer to this problem since the mid-twentieth century. This talk brings into focus the Svalbard Global Seed Vault (SGSV) – an international long-term seed storage facility in the Arctic backing up collections of agrobiodiversity worldwide – as a technology that maintains natural resources as much as futures of nature-as-resource and, paradoxically, their own futures of loss. Based on ethnographic field research conducted in Svalbard and expert interviews with SGSV representatives, I analyze the ambiguous aesthetic apprehension and rhetoric rejection of the doomsday narrative that has surrounded the SGSV ever-since its establishment.

Bringing critical accounts of modern Euro-Western apocalypticism into conversation with political ontology debates, I conceive both the doomsday story and the SGSV's techno-optimistic promise to stand guard against the looming 'rendezvous with extinction' (Fowler and Mooney 1990) as worlding practices taking oppositional but structurally related positions in the technoscientific negotiation of futurity. Designed to sustain the invaluable resources and thus the future of modern agriculture, the SGSV makes durable a specific past, present, and future emerging from and inextricably entangled in the modern/colonial ontology of nature-as-resource and its promissory temporality of linear and manageable progress. However, the technological management and extractive exploitation of nature-as-resource are the seed of today's agrobiodiversity loss. Accordingly, I argue that what the SGSV conserves, along with the ontology of nature-as-resource and as one of its materializations,

is the possibility of the same future of loss it seeks to preempt. This illustrates a temporality that is not so much a linear as a circular trajectory revolving around and constantly reiterating the potentiality of crisis that is its own raison d'être.

876 THE TOIL FOR SOIL: MAINTENANCE AS INTERSECTION OF MORE THAN HUMAN CARE-TIMES

Syed Shoaib Ali (Ambedkar University Delhi) Shaina Sehgal (Ambedkar University Delhi) Naomi Milner (University of Bristol) Ian Fitzpatrick (University of Bristol)

What is soil-time? During ethnographic fieldwork among apple-growing households of Indian Himalayas we found that farmers concerns with soil were less about the agricultural soil itself but situated in the larger agrarian environment. To most farmers, the loss of soil health wasn't the loss of a natural endowment to intensive agricultural practices because, to them, the soil wasn't something that pre-existed, but a thing made and maintained with continual toil. This toil is generational labour claiming, making mountainous land cultivable; seasonal labour in harvesting and drying fodder, and selecting the species that flourish; everyday labour in weeding, livestock, and composting. This toil is thoroughly gendered. Men are responsible for orchards, retain and manage the incomes; women are responsible for livestock, fodder, water, and manure. Both - apple growers and distributors for fertiliser companies, complained about the increasing scarcity of manure. Without the compost fuelled recuperation of soil structure, fertilisers wouldn't do any good. Apple growers (men), as well as fertiliser companies, salvage economic value from the women's care-time in the larger agrarian environment.

Thus soil-time is not limited to the annual and seasonal nutritional requirements of apple trees. Soil-time is a negotiation with the temporalities of maintaining livestock, fodder, water, composting, and the weary human body. Such negotiations, we argue, happen through — a. contestations over time, and b. contestations about time.

Contestations over time manifest in the widespread proliferation of education and public health that challenge conventional gender roles. Contestations about time emerge at the intersection with more than human timescales - temporalities of earthworms, cows, grasslands, or water. These contestations are further negotiated through local institutions that affect the governance of commons, water, livestock, or groundwater. Among our novel findings is - effective democratic institutions play a critical role in shaping the continual maintenance of soil.

360 NO DIG, NO RIDE: MAINTAINING DIY DESIGNED BIKE TRAILS

Liam Healy (Aarhus University / Goldsmiths, University of London)

This paper draws on research with DIY bike trail builders and the temporalities of maintenance and care that they employ. Very little attention has been paid to the practices involved in maintaining DIY trails and the communities that do this work. I argue that trails spots build on feminist STS scholars invitation to tune into neglected practices by expanding conceptions of care in spaces typically conceptualised in terms of action, expression, and the affective experience of bike riding. The paper is structured around three forms of maintenance: First, caring for the land that the trails are built on, that are often in SLOAP, and 'post-capitalist ruins', for example former mines/quarries, spaces between major roads, and landfills. I think with the practices that trail builders undertake as a kind of 'repair work' of these spaces. Second, the temporal concern of caring for the trails themselves so that they can remain functional. Here I argue that these practices are not only unseen, but intentionally kept secret because the spaces and trails often exist illegally. Third, that these spaces are always a more-than-human (un-)commons, providing small enclaves for observing how humans (bike riders) and non-humans (trees, plants, and animals) might live 'well' and co-become together. The commons also highlights who and what is excluded, and here practices are often employed to close down participation and exclude outsiders. I think with this practice as maintaining their secrecy, which is often cited as extremely important for local builders. Importantly, maintenance is not innocent, and following feminist approaches to care highlights who or what is excluded when caring for one thing. I argue DIY bike trails thicken care and provide multiple ways to conceptualise the practices enacted in these spaces.

1039 THE MATTER OF TIME IN DOMESTIC MAINTENANCE : THE NEED FOR PERSONAL TIME AND INQUIRIES ABOUT THE ONGOING ONTOLOGIES OF THE ORDINARY

Solène SARNOWSKI (École des Hautes Études en Sciences Sociales (EHESS)) Nathan BEN KEMOUN (Université Paris-Dauphine)

Cross-analysing two different field works rooted in domestic dwelling (the investigation of sefl-convalescence throughout the maintenance of domestic space and the study of engagement with every-day things in zero-waste inquiries), our proposition underlines two issues regarding the matter of time in domestic maintenance and opens an exploration of the meaning of what dwelling means when concerns for duration are raised.

Firstly, the maintenance of domestic space stresses a tension between the time of things and the time of the self. At the crossroad between emancipation and dwelling reappropriation, maintaining domestic space raises the need for personal time where maintenance activity of domestic space is an opening toward the transformation of the self. At the same time, it engages people with always changing materiality, (de)composing, wearing out, and breaking things. As people inquire about how to make the things composing their environment last, time allowed to things and time allowed to oneself meet as an ongoing experience caught between duration and change in dwelling.

Secondly, maintenance of domestic space raises concerns about the rhythm of the care for things. In domestic care, people are not familiar with the things they live with “beforehand”. Rather, we show that they work to get familiar with them. What matters therefore is how to make the time for caring. In both our field works, the care for maintenance rhythm, and especially its gentleness, opens to inquiry about ongoing ontologies of the ordinary things that are taken cared of in the maintenance of domestic space.

Taking advantage of the concern of this panel for the times of maintenance, our proposition ambition in short to explore through the perspective of domestic dwelling the tension between inquiry and duration, ontological change and making things last.

724 THE TOUCH OF SALT: ON TIME AND EMBODIMENT IN FOOD PRACTICES RELATED TO EXCESSIVE SALT CONSUMPTION

Alexandra Endaltseva (CERTOP CNRS)

Food consumption is an inescapable maintenance practice. Entangled with socio-demographic, socio-cultural, environmental and techno-scientific transitions (Poulain, 2021), food practices enact care (or not) and embody imagination for possible futures. This manifests in the orders of sensing (Voß and Guggenheim, 2019) and valuing (Heut’s and Mol, 2013), as well as in techno-scientific desires and public policies related to food security, palatability, and public health (El Bilali, 2020; Gorski & Roberto, 2015).

This paper presents work-in-progress within a research project exploring excessive consumption of salt/sodium in France. I propose an alternative approach to the WHO (2013) strategy for global salt intake reduction by 2025, attending to salt intake as an embodiment of care, embedded in different timescapes. My findings are grounded in ethnographic observations in 13 households, two public workshops at the House of Youth and Culture in an underprivileged neighbourhood, and a collective experiment with a feminist association ‘Talk to Them’, all in Toulouse and surroundings. I situate salt practices in specific time-space configurations (snacking while working, cooking dinner at home, etc.) and attend to the embodied ways of knowing, such as tasting and touching. The latter being an explorative and slow mode of knowing, requiring time and continuous oscillation between touching and being touched (Myers & Dumit, 2011).

I propose that caring for salt is a work-intensive embodied practice, which articulates the contradiction of maintenance time (tinkering, cooking, eating) and production time (working, inventing, reformulating). Within this practice, the two meanings of salt emerge: ‘for the pleasure of eating’ and ‘as a danger for health’. These are associated with two salt temporalities: ‘fast salt’ (invisible, hidden in transformed products, emerging from ‘not having time’) and ‘slow salt’ (available for seeing and touching, absorbing time). I conclude by reflecting how touch offers emancipatory potential in food practices research.

Room N113 - Panel 071. AGING TECHNOFUTURES: FUTURING OLD AGE IN TECHNOLOGICAL SOCIETIES

Session 2

374 AGEING AS A DRIVER OF PROGRESSIVE POLITICS? WHAT THE EUROPEAN SILVER ECONOMY TEACHES US ABOUT THE CO-CONSTITUTION OF AGEING AND INNOVATION

Alexander Peine (Utrecht University) Benjamin Lipp (Cornell University)

Ageing has become a ubiquitous concern in European policy. However, old age is often dominated by and used as a justifying background for other policy considerations, like economic growth or technological innovation. In this paper, we employ a co-constitutive perspective on the case of the European Silver Economy. On the one hand, we focus on how ageing has been interfaced with imperatives of European policy: economic growth, consumption, and technology futures. We argue that the Silver Economy breaks with some assumptions common within European old age polices. Above all, the Silver Economy is characterised by a number of tensions between, on the one hand, common ageist assumptions about old age and, on the other hand, alternative visions of what ageing could mean as a policy field. However, these potentials have never been fully realised as the Silver Economy has become domesticated within the broader field of European Active and Healthy Ageing policies. In our paper, we hypothesise what it would mean to take ageing more seriously as a driver of progressive politics in the making of technological and economic futures. Such a speculative take on current old age policy, we hold, opens up a number of fruitful avenues and new interfaces between critical researchers, practitioners, and policymakers in co-creation ageing technofutures.

1055 TECHNOFUTURES OF SOCIAL ISOLATION AND LONELINESS AND THE EMERGENCE OF AGEING-IN-COMMUNITY INFRASTRUCTURES

Daniel López (Universitat Oberta de Catalunya)

STS scholars have largely studied future-making practices in technology developments, but until recently gerontechnologies have remained out of their scope. Mostly focused on care technologies, studies of gerontechnologies have shown that futures of massive long-term care demands are decisive in problematizing already established care arrangements and transforming them according to values such as cost-effectiveness, person-centredness, autonomy, accessibility and social and health integration. Less attention has received another ageing future, that of increasing social isolation and loneliness, together with the ageing-in-community infrastructures that are emerging to mitigate it. This is quite striking given the fact that social isolation and loneliness are considered potential major public health problems in ageing societies, and the latter is seen as strategic in most policies about the demographic transition. This paper focuses on two of these innovative infrastructures for ageing-in-community: the first one is senior cohousing, a collaborative housing development led by older people who aim to intentionally age together in solidarity; the second one is a digital platform run by social services where older people living in the same area can talk, engage in activities and meet. The latter is based on a 10-year ethnography of the emergence and development of these communities in Spain; the latter is a case study based on interviews with users and workers and participant observation during the lock-down. Both are being promoted by policy-makers, gerontologists, architects and entrepreneurs as innovative solutions to prevent the harmful consequences of a future of increasing social isolation and loneliness. Based on the concept of anticipation, I critically explore how futures of social isolation and loneliness are made present in these infrastructures, how this configures desirable and undesirable old age futures, and for whom, as well as modes of living toward future in old age.

702 RECORD-KEEPING ON THE MOVE: IMPLODING THE PRIVATE AND THE PUBLIC IN NURSING HOME CARE

Nete Schwennesen (Roskilde University) Mie Winther Christensen (Copenhagen University)

Digital data production has emerged as a matter of concern in discussions about the current state of nursing home care and what it may become. On the one hand, data driven care is heralded as a vehicle for person-centered care, while on the other hand, care workers and policy makers call for less documentation and bureaucracy. This presentation traces ethnographically how record keeping at a nursing home in Denmark, is transformed by the introduction of mobile digital devices. The paper gives attention to the role of place in record-

keeping, and illustrates how mobile digital devices implodes the relationship between the private and the public at the nursing home, by moving data production from a care worker zone, towards a zone of residents private places. Whereas record-keeping and data production was previously an activity done by the care worker in isolation, mobile digital record keeping is created through relationship between residents and care-workers. We argue that this requires care-workers careful attention to reconsider what is made visible and invisible. On this bases, the paper calls for new forms of accountability when record-keeping becomes mobile.

400 PARADOX EFFECTS OF THE RECENT INCLUSION OF THE CARE PERSPECTIVE INTO THE OVERARCHING NARRATIVE OF CARE ROBOTICS

Kevin Wiggert (Berlin Technical University) Martin Meister (Berlin Technical University) Ingo Schulz-Schaeffer (Berlin Technical University) Tim Clausnitzer (Berlin Technical University)

For a long time, the idea of care robots and the respective projects were mainly driven by state agencies and engineers who opportunistically seeked for applications for their purely technical approaches. Consequently, the ageing technofutures the call refers to only represented a one-sided technology push perspective, while the demand side was largely neglected or restricted to an unrealistic view of aged people and the care domain. The call refers to some of the well-known critiques of this techno-paternalism, which has been shown to be the major reason why only very basic realizations of working robotics solutions for care purposes exist up to date.
But in the last decade, a new overarching narrative of care robotics has emerged that purposely includes the perspective of professional care work in the picture of ageing technofutures. This narrative consists of two discursive positions: First, a rhetorical dramatization of the consequences of the ageing society as a crisis, including an ever-increasing shortage of care personnel. And second, the promise that automation will be restricted to service tasks, thus giving the care workers more time for the most valuable part of their jobs, sentimental work. Here, the perspective of care is closely aligned with the perspective of engineering efforts, supplying these with knowledge about “really senseful applications”, and with the perspective of state agencies, allowing them a restructuring of funding procedures which were recognized as to be ineffective.
But while in this new narrative the care perspective is included, it has the somewhat paradoxical effect of a self-perpetuation of technical applications that are highly implausible resulting in a disruption of daily care work routines instead of supporting these routines. Based on own empirical examples, we give interpretations about the mechanisms that can explain how the narrative causes the self-perpetuation of implausible solutions in the care sector.

Room N117 - Panel 079. INNOVATION AND THE POLITICS OF TECHNOSCIENTIFIC FUTURES: PROBLEMS, ENGAGEMENTS AND POSSIBILITIES

Session 2

94 SCRIPTS, SITES AND ‘MODEL PUBLICS’ IN DEMONSTRATIONS OF CARBON REMOVAL

Laurie Waller (University of Manchester)

This paper will discuss an emerging fieldwork collaboration being developed under the banner of “responsible innovation” and centred around a series of carbon dioxide removal (CDR) demonstration projects in the UK. Ambitious projections for future CDR in global climate assessments have generated controversy and raised questions about the roles integrated modelling plays in climate politics. Given the nascent development stages of many CDR methods, demonstrations have been positioned within innovation discourses as both theatres of proof where the viability of modelling projections will be publicly validated and market-making procedures linked with the construction of novel carbon accounting measures and trading systems for so-called “negative emissions”. Innovation discourses, however, offer only a partial account of these demonstrations. In practice, the CDR approaches being demonstrated in the UK currently do not include the more sensational technological solutions that have animated discussions about “geoengineering” but are primarily biological and terrestrial, in some cases enhancing existing “carbon sinks”. This paper will make the case for attending to UK CDR demonstrations as sites where (sometimes competing) social scripts of assessment models and climate politics are experimentally enacted by environmentally situated collectives. The paper will develop the notion of the ‘model public’ as a heuristic for analysing how controversy over integrated models surfaces, or is framed out, in both fieldwork interactions and in wider publicity for the demonstrations. The discussion will situate the emerging fieldwork collaboration in relation to STS debates about demonstrations and the possibilities for deliberative frameworks of

"responsible innovation" to land in sites where modelling simulations provide the predominant scripts of social and environmental futures.

848 TRICKLE DOWN INNOVATION FOR RUSTBELT REGIONS? A COMPARISON OF TWO SEMI-CONDUCTOR HUBS IN THE US AND EAST GERMANY

Alexander Wentland (TU Munich) Marlise Schneider (TU Munich)

Governments on both sides of the Atlantic are investing billions into innovation-oriented growth initiatives in so-called rustbelt regions, parts of the country that have suffered from severe industrial decline. These initiatives often take the shape of lighthouse projects that channel both public and private investment into R&D, regional technology clusters or subsidies for private sector high tech production. The explicit assumption behind such policies is that these investments will reinvigorate not only shrinking or stagnating regional economies but also benefit all people within these regions. We problematize this notion of "trickle down innovation", comparing two representative cases of this paradigm. East Germany, particularly the region of Saxony, is considered a prime example of rapid de-industrialization after the German reunification. In the past two decades, however, "Silicon Saxony" has managed to become the largest semiconductor R&D and manufacturing hub in Europe. Similarly, upstate New York has suffered from a dramatic shrinking of its economic base and population for several decades. Through the recently formed partnership around SUNY Polytechnic the semiconductor industry has generated over $15 billion in capital investment. US policymakers have made an explicit effort to place the national and global cutting edge of the semiconductor industry in the struggling region surrounding Albany and Utica. While the success of such initiatives is debatable, we argue that "trickle down innovation" policies undermine the economic, social, and political repair of these regions. Articulating and managing post-industrial transformations as an innovation problem, in both cases, has led to regional development that remains mechanistic and decontextualized from local communities. Despite their attempt to reinvigorate lost social structures, these efforts de-politicize the issues that lie at the core of regional inequality: the redistribution of wealth, the role of welfare-state institutions, and democratic decision making about what a desirable future for a region looks like.

179 MAKING FOODTECH FUTURES VALUABLE

Tanja Schneider (University of St. Gallen)

The question how to achieve a sustainable future of food is fiercely debated in a wide range of sectors and settings including industry, academia and national as well as international policy arenas. With continuing population and consumption growth, intensifying competition for land, water and energy, and the likely impact of climate change, these debates centre on the key challenge of 'how to feed 10 billion people by mid-century'. Against this background, a vanguard of entrepreneurs and investors based in Silicon Valley and beyond has been developing and funding novel foods – so-called FoodTech innovation - with the aim to transform the production and consumption of food. Examples of recent FoodTech innovation include plant-based milks and meat alternatives, cellular meats, produce grown in vertical farms and insect-based foods.
In this presentation I dissect the food futures being envisioned and realised by so-called FoodTech entrepreneurs and investors. Based on media analysis, event ethnography and qualitative interviews with different actors in the growing FoodTech sector in Silicon Valley, Europe and Israel, I explore their visions of technologically-enabled food futures. Informed by recent STS and related research on novel foods (e.g., Stephens et al. 2017; Fuentes and Fuentes 2017), valuation studies (e.g. Kornberger et al., 2015) and future-making (Oomen et al, 2021), I specifically focus in my analysis on the process of making FoodTech futures valuable. My analysis shows how particular visions and collective imaginations of FoodTech futures become socially authoritative. As such my research addresses and contributes to a central question in valuation studies: How do some accounts, practices and performances make some futures count more than others?

740 INNOVATIVE APPROACHES FOR INTEGRATIVE KNOWLEDGE TRANSFER - AN EMPIRICAL STUDY OF UNIVERSITY-DRIVEN INNOVATION LABS IN GERMANY

Tobias Held (Karlsruhe Institute of Technology) Felix Schneider (Görgen & Köller GmbH) Sophie Kaiser (Karlsruhe Institute of Technology)

Being a main actor in regional innovation systems, academia has been confronted with drastically changed expectations in the recent past. The increased importance of societal relevant knowledge production has brought university-driven transfer processes on the agenda of science policy and likewise public interest. A need for socio-technological innovation in the eye of contemporary societal challenges is contesting the role of academia urging

for innovation in knowledge producing systems. One promising tool to fostering institutional change are innovation labs. Such spaces for experimenting with novel strategies and approaches for knowledge transfer have become a prominent phenomenon in German academia. Though, little is known about how conceptional approaches are applied in order to re-shaping socio-technological futures and likewise institutional conditions of the academia. Consequently, our research project is guided by the following question: Which conceptional approaches are applied in university-driven innovation labs in Germany, and how can transfer processes successfully be aligned with societal challenges and integrative approaches?

The research conducted is part of the interdisciplinary research project “TRANSFORM – the Transformative Institute”, which investigates pathways for implementation and institutional alignment of transformative science in the German academia. The conceptional model applied encompasses characteristics and interactions among the individual, institutional and systemic level linked to transfer processes. The research design of the study presented is based on a comparative case-study approach. A total of nine university-driven innovation labs are selected for in-depth investigation and comparison. The analysis is accomplished by collecting qualitative data by conducting semi-structured interviews with the managers in charge of each of the selected innovation lab.Findings indicate a delineation of different conceptions applied including variations of transdisciplinary and transformative research processes. Furthermore, our results show relevant conditions for a successful integration of society und thus perspectives on contextualised societal challenges in university-driven transfer processes on the three levels mentioned.

396 PROMISING TECHNOSCIENTIFIC FUTURES AS A MEANS TO CONSTRUCT SUSTAINABLE INNOVATIONS: THE CASE OF THE AUSTRIAN "BUILDING OF TOMORROW" RESEARCH PROGRAMME

Harald Rohracher (inköping University, Tema T - Technology and Social Change) Michael Ornetzeder (Austrian Academy of Sciences, Institute of Technology Assessment)

Publicly funded research programmes are seen as a major enabler of innovations. Highlighting grand societal challenges we face today, such programmes become increasingly normative in orientation and are designed as instruments for achieving policy-driven missions towards particular imaginaries of technoscientific futures. In this presentation, we investigate an early example of a national mission-oriented research programme that has had a significant impact on the building sector in Austria and was able to maintain its momentum over a period of more than 20 years. Empirically the paper builds on the analysis of policy documents and interviews with key actors from programme management, programme participants and other actors from the broader socio-technical system of sustainable buildings in Austria. Technoscientific futures and imaginaries of a sustainable building sector did play an important role in driving this programme, but not in a straightforward way. The substantial impact this programme has been able to unfold is related to its ability to regularly ‘re-invent itself’ by changing its focus and re-packaging promises of technoscientific futures while at the same time maintaining its mission-momentum. In addition, the programme was able to facilitate integration and interdisciplinary cooperation of different research communities from both social science and engineering, and a continuous knowledge brokerage between research, practice and policy. This stands to some extent in contrast to ideas of mission-oriented policy programmes built around specific imaginaries of technoscientific futures.

Friday 8th July

14:00-15:30

Room N116 - Panel 011 INFRASTRUCTURED TIMESCAPES OF THE ANTHROPOCENE AND CLIMATE CHANGE

Claudio Coletta (University of Bologna)
Asher Boersma (University of Konstanz)
Olivier Chanton (IRSN)

Time and temporality are inherently part of the concepts of “crisis”, “risk”, and “transition”. Amid the “great acceleration” and the scenarios outlined by IPCC reports, the precarious agreement of the COP meetings, the pressing demands for climate justice and the phasing-out of fossil fuels, temporal aspects are taking on new relevance for STS.

As Bensaude-Vincent (2021) pointed out, the actual debate on the Anthropocene still emphasizes the ‘Anthropos’ and the human exceptionalism over the ‘Kainos’ (epoch) and its time multiplicity. The panel seeks to address this asymmetry by exploring the heterogeneous, co-existing, clashing, uneven, and materially organized temporalities of the Anthropocene and Climate Change. The aim being to unfold their timescapes (Adam 1998), their polychronic and more-than-human existence, where modern linear time is but one account among many others.

First, the timescape of the Anthropocene and the one of Climate Change seem to bring specific ‘time-frames of reference’ conducive to different forms of political engagement (Nordblad 2021). Moreover, such timescapes are infrastructured, with infrastructures becoming key sites for time production, allowing or hindering navigation across the past, present and future at varying paces and tempo. Finally, since the Anthropocene and Climate Change are temporally infrastructured, they undergo time leaks, delays and accelerations as well as interferences that require new forms of care to be monitored, managed, maintained, governed, understood.

The panel invites to discuss the infrastructured timescapes of the Anthropocene and Climate Change as shaped by different means of time production, including technoscientific knowledge, climate governance, political actions and movements, (digital) infrastructures, as well as maintenance & repair and care practices.

We welcome theoretical, empirical and methodological contributions on topics including (but not limited to) the following:

- The technoscientific work to define the Earth’s time horizons; the making of the “ends of the world” (Danowski and Viveiros de Castro 2017); the emerging approaches to deal with risk in critical infrastructure settings, such as the regulatory regimes based on hybrid temporalities adopted in the nuclear energy sector ; the “deep-time reckoning” practices (Ialenti 2020) in geoengineering processes (e.g. nuclear waste management, GHG capture, etc.).

- The rhythms and timelines set by climate governance at transnational, national and urban scales, translated across situated variations and interests; the frictions between near-time actions and long-term planning; the momentum and the urgency enacted by climate movements to update the agenda with radical temporalities and hopes.

- Temporalities of more-than-human ecological reparation (Papadopoulos et al. 2022), including futures best served by human inaction, drawing on “the mastery of non-mastery” (Taussig 2020) - where at times not intervention (e.g. planting trees), but restraint and patience may be the best route to regeneration. Or decolonized forms of care, such as indigenous landscape and ecosystem cultivation through burning.

- The increasingly experimental nature of transitions to climate-neutral futures; The temporalities of digital infrastructures; the socio-technical interactions between the big data assemblages for real-time management and the futures produced by the “vast machine” (Edwards 2013) that allows projecting human and environmental conditions in the next decades and centuries.

Session 1

337 DEEP ARROW OR LAYERED NON-LINEARITY? ON THE CHRONOPOLITICS OF THE ANTHROPOCENE

Luigi Pellizzoni (University of Pisa)

In a seminal work, Niklas Luhmann noted how the modern understanding of future as open and actionable

demanded technologies of defuturization, that is ways of drawing future events to a manageable format in the present. The limits of probabilistic prediction, emerged already in the 1920s, erupted around 1970 with the onset of the ecological crisis and the rise of complexity sciences. Precaution was the governmental reply, torn however by controversy over the proportionality of action vis-à-vis unpredictable events. The ascent of the Anthropocene narrative and the growing import of global threats (climate change, biodiversity loss, resurgent and insurgent epidemics, declining returns on innovation and energy extraction) should militate in favour of a precautionary approach, the call to glancing at a deep geological and technological past and future for acting in the present seemingly strengthening a linear understanding of time. The emergent chronopolitics, however, is anything but linear. Not by chance has precaution been virtually replaced by two non-linear anticipatory approaches, pre-emption and preparedness, suited to the neoliberal celebration of unpredictability, disorder, trial and error, surprise and crisis as a permanent condition. We are now arguably amidst a three-layered temporality. At the bottom lies a recursive one: chronological time is replaced with a messianic structure, a catastrophic or regenerative technological or geological eschatology being set against 'restraining' forces (again technical or geological, but also social). In the middle lies a modulated time. Threats are assumed as ever present, rising and sinking unexpectedly. Dealing with them is thus a matter of elicitation and prompt reaction, rather than of planning for solution. A fragmented time lies at the top: in everyday life threats are presented as unconnected events. The paper aims to elaborate on this messy temporal structure and reflect on its governmental implications.

394. CRYOPRESERVING THE PRESENT? THE CLIMATE CRISIS AND THE EMERGENCE OF A POLITICS OF SUSPENSION

Thomas Lemke (Goethe University Frankfurt am Main)

Scholars analyzing contemporary technologies of freezing have recently argued that "cryopolitics" represents an important extension of the classical concept of biopolitics as it operates by the principle to "make live and not let die" (Friedrich 2017; Radin and Kowal 2017). It extends temporal horizons by suspending metabolic processes and establishing a "state of a potentially reversible death" (Neumann 2006).
This talk would like to advance this theoretical proposition further by exploring the dimensions of a "politics of suspension" in the light of the climate crisis. It discusses the infrastructural role of cryopreservation and cryobanking technologies in addressing biodiversity loss and the vital challenges of the Anthropocene. These technologies promise to keep future options open by reversing past extinctions in order to address the existential threats of the present. Following this imagination, de-extinction scientists and biologists dream of restoring ancient ecosystems and resurrecting extinct species as a way of responding to the climate crisis. However, this politics of suspension might also contribute to tendencies to preserve the status quo by putting on hold the political and social transformations needed to effectively respond to the climate crisis.

684. CRITICAL INFRASTRUCTURES AND THE TEMPORALITIES OF EPISTEMIC JUSTICE

Govert Valkenburg (Norwegian University of Science and Technology NTNU)

Critical infrastructures are subject to acts of securitization, i.e. acts of making them subject to regimes of security. Such regimes produce inclusion and exclusion of actors, and by extension the inclusion and exclusion of knowledges. This, at least potentially, entails the challenge of epistemic injustice: knowledges and producers of knowledge may be excluded on unjust grounds. An additional layer of epistemic injustice is in the fact that knowledge is firmly predicated upon underlying temporalities and notions of time. Infrastructures (critical or other) enact and prioritize specific temporalities, which thus constitutes another line of including and excluding knowledges. At the same time, these infrastructure-temporalities may come under pressure because of temporal changes that are enforced by climatological shifts.
In this presentation, I discuss how critical infrastructures and the practices of securitization around them enact specific temporalities, and how this relates to the inclusion of knowledges. Particularly, attention will be paid to the stress to which these infrastructures are put as a consequence of changing climatological circumstances. Think of power infrastructures where stability is compromised by changing patterns of precipitation which influence the availability of hydropower, or global transport systems that are put to shocks because climate change opens up new routes and closes off others. Given the importance of such knowledge classes as local, indigenous and practical knowledge for the understanding of phenomena related to climate change, the inclusion of such knowledges in the governance of securitized, critical infrastructures merits further scrutiny. I suggest that temporalities are one primary site of contestation where such inclusion and exclusion are fought over.
The paper brings together core understandings about time, risk, and infrastructures.

393 TEMPORAL ENTANGLEMENTS OF URBAN TRANSITIONS

Claudio Coletta (University of Bologna)

This paper aims to account for the EU sustainable transition approaches from a time-based perspective. In particular, I argue that the processes of climate transition undertaken to address climate change challenges could

be understood as a temporal climate-digital-urban entanglement that involves data infrastructures, management, and knowledge. The core hypothesis of my argument is that, whereas the idea of transition is commonly considered as a passage from one state to another, in a non-linear and constructivist perspective it involves the shaping and the aligning of different time dimensions. The urban-digital-climate time interaction is especially relevant as cities act both as Anthropocene accelerators and places where the smart urbanism apparatus is repurposed towards climate adaptation and mitigation processes. This paper will address the climate transitions entanglements in EU cities through the following questions: How is data converted into temporal trajectories and how does data pace the rhythms enabling urban-climate transformations and their co-creation processes? How does the temporal work of digital infrastructures interact with the climate target agenda? What kind of urban futures, presents, and pasts are performed? The research adopts a case study approach and is conducted within the research project INFRATIME (www.infratime.eu). At the empirical level, I will investigate cases of “zero-carbon” and “viable” initiatives undertaken in Scandinavian cities. The fieldwork, currently ongoing, involves in particular the City of Gothenburg within the “Viable Cities” initiative. The dataset includes so far 20 interviews and analysis of documentary evidence, such as grey literature, reports, and participation in public (online) events.

Room N106 - Panel 012. DOING AIRBORNE EXPOSURE: STORIES, DEVICES, KNOWLEDGES AND PRACTICES

Brett Mommersteeg (Humboldt University)
Nona Schulte-Römer (Humboldt University)
Ignacio Farías (Humboldt University)

In this panel, we invite colleagues exploring current problematizations of airborne exposure as hazardous for human and nonhuman bodies. Most research on 'bodily exposure' focuses on how class, gender, race and space determine levels of exposure among human populations. Not losing sight of such structural lines of environmental burden, we are interested in collectively understanding how 'exposure' is made or, better, enacted through situated practices of knowing, sensing and articulating bodily impacts. The need to understand exposure as a practical achievement and political performance becomes particularly evident in relation to airborne mechanical and electromagnetic waves, such as ambient noise, sun radiation, 5G networks, light pollution, and others. We invite discussions that address the challenge of becoming exposed in two regards: stories of how bodies and groups learn to be affected and of how it is articulated and contested within various knowledge-practices.

We are interested in discussing how affected bodies and groups 'attune' themselves to airborne exposure and learn to articulate its effects on their health, well-being and on other non-human bodies. We are interested in stories about how exposed individuals become such, re-learning their bodies, their environments and themselves as exposed subjects. These stories might touch upon:

• How affected and concerned groups share and assess personal experiences of exposure
• The use and invention of personal devices and sensing techniques that make visible and/or protect the body from potentially harmful exposure
• The ways in which exposure becomes embodied (across different types of bodies, human and nonhuman)
• Everyday routines, practices and tactics to avoid unwanted exposures
• How ignorance is contested, and uncertainty and risk are collectively produced
• How affected groups organize in collectives, both online and offline
• Methodological challenges of negotiating "exposure" in the field.

We also invite contributions that approach exposures to such airborne phenomena, affecting individuals and populations in slow and invisible modes, as well as practices of problematizing and redrawing the line that separates and articulates bodies and environments. We are thereby interested in papers that outline how knowledges about bodily effects are produced and mobilized by public health experts, embodied health movements, affected populations and environmentalist groups. Contributions might address different aspects and dynamics:
• Modes of sensing – ranging from direct sensorial perception over the use of sentinel devices, measurement equipment and sensors that enhance sensorial perception to modelling methods
• Modes of representing airborne pollution and exposure – ranging from graphics, maps, numbers, public displays, and apps
• Public controversies, contestations of techno-scientific expertise and research-in-the-wild about exposure and its effects on human bodies
• Tensions between epistemological-political values, such as the 'burden of proof' – the obligation to provide proof beyond reasonable doubt of a direct relationship between two
variables; and the 'precautionary principle' – the obligation to act cautiously when conclusive evidence about a potential harm is lacking

We welcome various types of contributions, such as papers, artistic performances, interactive formats and other creative suggestions.

Session 1

623 THE POLITICS OF STABILISATION: AIR POLLUTION, PANDEMIC FRICTIONS, AND DOING EXPOSURE IN EPIGENETIC RESEARCH

Sophia Rossmann (Technical University of Munich)

Air pollution is often framed as the next big problem human and non-humans have to face, alongside climate change (WHO 2021). Tackling this issue has become a central target for policy and public health, building on research examining the health impact of air pollution exposure. This paper examines how air pollution is currently problematised, operationalised and measured in epigenetic research within a birth cohort study. Building on ethnographic fieldwork conducted at an institute of epidemiology and public health situated in a European metropolis, I trace how researchers grappling with the complexity of air pollution stabilise this exposure in two interlinked ways: modes of representing and modes of tracing. Firstly, researchers represent air pollution by

mobilising data collected at cohort participants' homes and across the city using sensors, tracking apps, exposure maps, and GPS data. Secondly, they trace air pollutants as embodied exposures in placentas and connect them on the molecular level to aberrant epigenetic changes and their potential long-term health effects. I demonstrate how these two modes allow researchers to advocate for preventive clinical interventions and to enrol local policy makers raising concerns for how to design the urban environments we live in. Yet what happens when these practices of stabilising air pollution get disturbed by a pandemic? I show how the Covid-19 pandemic sheds new light on how to gather and measure exposure data well and how to enact air pollution in research designs. This moment of friction makes tangible what I term "politics of stabilisation" in biomedical and exposure research; "agential cuts" (Barad 2007) that could have been done otherwise. The concept of "politics of stabilisation" allows to think more broadly about how stabilising certain relations, between exposures and bodies, and not others is a practical achievement and a political project. They influence which interventions are imagined possible.

426 WEATHERING AND ATMOSPHERIC CARE IN FACE OF AIRBORNE EXPOSURE

Sophie Van Balen (Erasmus School of Philosophy, Erasmus University Rotterdam) Irene Van Oorschot (Life Science and Society Lab, KU Leuven)

Air pollution in urban settings is increasingly emerging as a topic of political contestation. Struggles over knowledges are crucial to these processes of contestation, as citizen's socially distributed, materially mediated, and physically differentiated sensory experiences and embodied knowledges become articulated as additions to – or in contestation with – 'official'/quantitative accounts of urban air pollution (Calvillo 2019). In this field of contested knowledges, citizen's 'atmospheric politics' (Ahmann 2020) often rests on the capacity of those affected to become attuned to airborne exposure and atmospheric conditions more broadly.
In this contribution, we empirically attend to these practices of becoming attuned to airborne exposure. We do so on the basis of a research project on citizen sensations of climate change in Rotterdam, the Netherlands, and a research project on political practices of care in face of air/atmospheric pollution. Navigating the ways in which air pollution sensors and cartographic visualisations of atmospheric conditions resonate or contrast with embodied and sensory knowledges of climate change, we explore in particular the affordances of the concepts of 'weathering' (Neimanis & Walker 2014) and 'atmospheric care' (Vine 2019) to attend to the specific politics that characterize these practices. The notion of weathering aids in grasping forms of survivance in conditions both manmade and 'natural', both urban and metereological; on the other, these practices of attunement also generate novel forms of caring for domestic and more-than-domestic environments in order for these to be made 'as-breathable-as-possible' (Cf. Puig de la Bellacasa 2017). Together, weathering and atmospheric caring draw our attention to largely unacknowledged dimensions of atmospheric politics by connecting sensation, embodiment, and attunement.

156 BETWEEN PARANOID INFRASTRUCTURES: EXPOSURE AND ENCLOSURE IN 5G NETWORKS

Rory Sharp (York University)

Misinformation has the capacity to shape perceptions of shared space. Throughout the Covid-19 pandemic, viral misinformation about the harmful effects of fifth generation (5G) wireless technologies has been linked to vandalism, targeted harassment, and domestic terrorism. Strikingly, these acts demonstrate little familiarity with the mechanisms that enable 5G networks and have instead targeted existing wireless infrastructure. Awareness of 5G alters sensations of connection across social space, transforming passive architecture into objects of profound anxiety. Following recommendations from existing scholarship, policy makers have worked to stymie the spread of online misinformation about 5G, with unintended consequences. In online vernacular across the political spectrum, "5G" has evolved to denote the occluded, coercive power of novel technologies and is routinely invoked in discussions ranging from Internet of Things (IoT) devices to Covid-19 vaccines and treatments. Drawing from Science and Technology Studies scholarship and my initial dissertation research conducted through York University's Communication and Culture program, this project assesses 5G literature, including marketing material and online misinformation, to trace narratives of exposure and enclosure at play in the expansion of 5G networks. I contend that the struggle to define the terrain of debate around 5G stands in for broader socio-political concerns about novel technologies and environmental risk. Regardless of its veracity, misinformation about 5G attunes observers to the inherent uncertainty of mediated social life, intensifying existing stressors related to the technological imperatives of major telecommunications firms. Feelings of exposure are entangled with the affective sensation of enclosure, as neoliberal governmentality falters in response to the pandemic. Using 5G as a case study, this research paper argues in favor of emergent forms of counter-sovereignty that reject the violence of anti-5G activism, but acknowledge the deeply undemocratic tendencies of extant infrastructural paradigms.

Room N101 - Panel 014. INTERSPECIES AGENCIES: CONTROVERSIES, ONTOLOGIES AND NEW FORMS OF COHABITATION

Arthur Arruda Leal Ferreira (History of Science, Techniques and Epistemology / Federal University of Rio de Janeiro)
Rubén Gómez Soriano, National University of Distance Education (UNED/Spain)
Verónica Policarpo (Institute of Social Sciences/ University of Lisbon)

The theme of interspecies relationships stands out in some STS approaches such as Bruno Latour's Actor-Network Theory, Vinciane Despret's Political Epistemology, Tim Ingold's entanglement proposal and Donna Haraway's thematization of companion species, just to give a few examples. In these and other approaches, it is possible to observe that the interspecies bond manifests itself in several dimensions: 1) animal work and human-animal cooperation in different social settings, such as security services, sports, support for people with disabilities, rescue, medical warning and emergencies; 2) public health and scientific controversies about the control of animal populations, or interspecies contagion through contact with microorganisms; 3) the ethical dimensions of human-animal relations, with implications for the question of subjectivity, legal rights and the political mobilization of animal organizations and animal advocacy; 4) the responsible care and owning of animals and their effects in terms of assemblage of new collectives; 5) the intensive industrialized production and slaughter of animals for food consumption, clothing, etc.; 6) the relationship with wildlife, including issues relating to nature conservation, but also relationships with “recreational” activities such as hunting; 7) the question of experimental animals (in all areas), and their relationship with the pharmaceutical and cosmetic industry; 8) the relationship with the tertiary and leisure industry, including tourism, but also zoos.
This panel seeks to open space for proposals that work on socially controversial aspects and that equally involve multiple modes of scientific knowledge about/with animals. In this panel, we seek to bring to this discussion the new perspectives and debates about "multiple ontologies" and what it is possible to designate as "beyond the human". Here, animals can be brought to the scene as social agents, as active participants in a set of sociotechnical networks that attract, involve or "enlist" heterogeneous agents, with different interests and very diverse conditions and possibilities for action: NGOs, civil associations, epidemiologists, veterinarians, medical doctors expertsin zoonoses, farmers and policy makers, to name a few.
We invite proposals that address one or several of the following questions: How would each profession define the human-animal relationship? What are the technical and material devices put into action in human-other animal interactions, in each of these particular contexts? How do these techno-scientific devices operate to produce specific, sometimes conflicting, versions of animals? And what are the possible spaces of resistance for these animals? Proposals that stemming from either ongoing or completed research, empirical work or theoretical discussions are welcome. We call for proposals that may challenge the anthropocentric idea of “thinking the animal”, and rather focus on the set of possibilities available for “living with the animal”: new interspecies regimes and multispecies commons.

Session 1

1049. DIFFERENT MANNER - THE SAME OUTCOME? THE AMBIGUITY OF HUMAN-NONHUMAN RELATIONSHIP IN TWO CASES OF ESTABLISHING NUCLEAR ENERGY IN POLAND IN THE ’80S AND NOWADAYS.

Marcin Mielewczyk, Adam Mickiewicz, University in Poznan (Poland)

This paper aims to explore nature-culture entanglement on nuclear energy by comparing the articulated reasons for establishing and approaches to the environment at two attempts to build nuclear power plants in Poland. My analysis is based on longitudinal research utilizing multispecies ethnographic studies in the village of Żarnowiec (Poland), interviews with energy engineers, and the analysis of documents focusing on the organization of interspecies relations around nuclear power plant projects.

Since the reactor that the constructors planned to install in Żarnowiec in the 80s used an open cooling system, the scientists predicted that the temperature in the nearby Żarnowieckie Lake would rise by about 10 degrees Celsius, they decided to stock the lake with thermophilic and herbivorous fish. In order to maintain the population of the new species, the existing predatory species were fished out en masse. However, after the catastrophe in Chernobyl in 1986, construction was stopped, and the unfinished project was abandoned to this day.

By drawing on the classic STS literature, I frame the work of the organisms from the ecosystem of the Żarnowieckie Lake as invisible work (De Laet & Mol 2000), which stabilized the 80s nuclear power plant project. At the same time, I ponder the question of the contingencies of ecological valuation of nuclear energy concerning other species in each case - the Żarnowiec project and the contemporary one. That's because the Polish government is planning to build a new nuclear power plant to meet the CO2 emission limits imposed by the EU.

The energy transition from fossil fuels towards carbon-free sources is one of the high-stakes areas in order to respond to climate challenges. For this reason, it is crucial to emphasize interspecies relations to ensure the flourishing of nature-culture relationships in this field, to which I contribute to the discussion in STS.

72 ATTUNING TO TRANS-SPECIES PIDGIN ARTICULATIONS: PIGEON RACING AS A CREOLIZATION OF INTERSPECIES SUBJECTIVITIES

Kristen Livera (Katholieke Universiteit Leuven)

Actor Network Theory is a lynchpin that presides over my Anthropological inquiries of how racing pigeons and fanciers re-inscribe and re-articulate themselves in the world. Pidgin is a creolization that radically reassess ontologies, rendering reality multiple, where discrepant version coalesce in conversations. By tracing multiple, heterogenous, overlapping topologies of various relational fields that entangle the pigeon and fancier's worlds, networks of agencies allow for a polyvocality to reveal how semiotics act and enact realities of both materiality and immateriality. Material semiotics is generative, it recomposes, reassembles juxtapositions. This ethnography is not merely an ethology of the pigeon's relation to its environment, it is an ecology that relates the multiple subjectivities in relation to the pigeon and the network of various agencies inter-woven into these human-animal relations. Pidgin stitches the sutures of the Great Divide, loosening the categories that pigeonhole animals to speciesism or belonging purely to "nature," but included them nature-culture hybrids. Becoming-with-pigeon actively engages the pigeon as a co-conspirator in forming our realities and lifeways, in becoming otherworldly. These are processes that produce. Becoming is interactional, it re-constructs the world, it enacts realities. I ethnographically follow different enactments of reality and becoming, attending to the reconfigurations and rearticulations of human and animal bodies within intra-active sites. My research seeks out various ways of co-constructing reality and re-articulating bodies to speak differently (Despret 2004), within a hyphened space of third-subjectivities (ibid.), of pidgin. Pidgin reveals the multitude of ways that humans and animals emerge together in the world, co-constructing knowledge with and within the environment.

331 WHAT IS A DOG ABLE TO DO? THE CHILEAN KILTROS AS POLITICAL AGENTS

Arthur Arruda Leal Ferreira (Universidade Federal do Rio de Janeiro)

The old spinozian question (what are bodies able to do?) can be translated by some contemporary authors, such as Vinciane Despret: 1) What would animals be capable of if we changed their conditions?; 2) What would animals say if we proposed good questions? An interesting and empirical way to explore these questions can be seen in Chilean cities with a quite peculiar actor: street dogs (kiltros). As a Brazilian with frequent passages through different Chilean cities, I worked on a blended ethological-ethnographical approach that allowed me to reflect on some aspects of this singular antropozoogenesis blending dogs-and-humans-in-the-cities. The aim of this work is to reflect about this collective experience through some concepts. In this sense, I would like to sustain that: 1) this experience produces a new kind of citizenship because it doesnot only happen in different cities, but also involves rights and laws (e.g, Cholito law); 2) it creates a kind of reciprocal care and domestication that involves feeding, playing and occupying different public spaces (as public protests); 3) it produces a type of domestic cosmopolitism because it brings the possibility of relationships based on open trust without any priority of some groups (ecological ones) or territories (homes). In short, it is possible to say that it creates a kind of an interspecies socialism that is present during different political scenarios and especially now with the popular uprising in Chile (since 2019). The kiltros presence here isn't only symbolic, but really active in a shared and distributed political action, especially in manifestations.

817 DE-EXTINCTION AND THE ROLE OF ANIMAL CHARISMA IN FORGING NEW HUMAN-ANIMAL RELATIONS

Koen Beumer (Utrecht University) Tessa Molhuizen (Biodiversity in Business)

The extinction of species has always been considered final and irreversible. Yet scientists across the world currently attempt to resurrect extinct species with the use of synthetic biology – a practice known as de-extinction. De-extinction is presented as a method for nature conservation. De-extinction has been subject to heated discussions regarding its ethical implications (Seddon et al. 2014; Sandler 2017) and ecologists have repeatedly questioned its effectiveness as a restoration strategy.

How are human-animal relationships redefined through de-extinction? As a new interspecies bond, de-extinction seemingly symbolizes the ultimate human control over animals, who would not exist without human intervention. Upon closer scrutiny, however, we found that animals themselves are also active participants in the complex socio-technical network of de-extinction – especially through their charisma.

Departing from the question why scientists select some species for resurrection while ignoring others (that may be more favorable from a conservation biology perspective), we systematically identified nine de-extinction projects over the last 35 years and interviewed 18 stakeholders involved in these projects. We found that the selection of de-extinction species can best be explained by the animal's charisma – even to such an extent that the charismatic status outweighs the conservation benefits. Drawing on STS insights on priority setting in research (Ciarli & Rafols 2019; Dalrymple 2006), we subsequently argue that the animal's charisma is able to exert such a strong influence on the selection of de-extinction species because of the specific relations that researchers have with funders, publics, and users.

Room N113 - Panel 030. POLICY INSTRUMENTS AND THE MAKING OF SOCIOTECHNICAL FUTURES: PRODUCTION, CIRCULATION, AND EFFECTS

Nicolas Baya-Laffite (Université de Genève)
Aykut Stefan (Universität Hamburg),
Bilel Benbouzid (Université Gustave Eiffel),
Marlyne Sahakian (Université de Genève)

Policy-making and public debate in technological societies are characterized by heavy reliance on science-based visions of probable, desirable or potentially catastrophic futures. Policy instruments play a key role therein, as sites where such futures are produced, circulated and put to work in the governance of very diverse sociotechnical matters at multiple sales. As such, they offer an interesting vantage point from where to examine the politics of technoscientific futures.

In keeping with fruitful developments at the crossroads of political sociology and science and technology studies, this panel seeks to shed light onto instruments and future making in different policy sectors (climate change, energy, agriculture, digital technologies, agriculture, urban development, and industries) and thereby on how instruments and future-production devices circulate from one sector to another.

Papers are invited to consider instruments and issues at different scales - global, national and local. We welcome in particular comparisons across sectors and levels of intervention. They can focus on their production, circulation or effects in regard to future-making practices, techniques, or knowledge. Papers can deal with one specific policy instrument or compare different instruments, in one or in multiple sectors. We welcome, for example, papers examining the use of impact assessments and scenarios in one sector (i.e. in environmental or digital governance) and / or looking at how they migrate across sectors.

Authors are invited to explore, among other issues: What kinds of knowledge, actors, and scales are privileged by / for different policy instruments in the production of futures? How are different instruments framing temporal and geographical scales in the production of futures? What tensions and conflicts can be observed? How do different policy instruments foster the circulation of futures across social arenas ? What effects do they produce in public debate? How is the production of future-knowledge imbricated in conflictual processes of collective construction of futures ?

We hope to cover as many instruments and sectors as possible to foster potential comparisons during the debate and in future work. On this basis, this panel aims at initiating a research programme gathering scholars from STS and other thematic domains of expertise, raging from energy to AI, around policy instruments and future making practices.

Session 1

610 PRACTICING THE FUTURE IN AN ENERGY TRANSITION: FROM NATIONAL SCENARIOS TO EVERYDAY PRACTICES

Marlyne Sahakian (University of Geneva) Orlane Moynat (University of Geneva) Wladyslaw Senn (Terragir association) Vincent Moreau (University of Geneva)

In the sociology of expectations, the future is seen as performative in the present: how energy futures are imagined has consequences for how the energy transition might be enacted today. Representations of energy futures are often communicated through national and science-based scenarios that do not always represent how such changes might affect people's daily lives on a more local scale. They also tend towards forms techno-optimism, such as the proliferation of renewable energies, or even science fiction, in the depiction of carbon capture and valorization. Significantly, sufficiency measures – or reductions in energy usage – are oftentimes ignored in such scenarios. Based on existing energy scenarios at the national and global level, as well as a horizon scan of promising measures to promote sufficiency, we developed a series of personas who represent what living in Geneva might look like in 2035. Social practice theoretical reflections are brought in, in three ways: conceptually, in recognizing the future orientation of teleoaffectivities; as a methodological tool for describing

personas engaged in future practices; and in an emancipatory posture, in how imagining future practices might intervene in practices today through reflexivity. The dominance of technological solutions as well as individualized approaches to shaping energy 'demand' is discussed, as well as the relevance of a 'systems of provision' approach, to account for changes prior to future moments of consumption. We draw on semi-structured in-depth interviews and participatory workshops in Geneva to discuss the tensions between national and more localized imaginaries of how the energy transition might play out, and what role representations of the future might play in encouraging engagement in the energy transition by citizens today.

106 ASSESSING THE EFFECTS OF AN EXPERIMENTAL POLICY INSTRUMENT: ASSOCIATIONS AS INTERMEDIARY AGENTS?

Evelyne Lhoste (LISIS – Inrae)

According to STS literature on transitions, the transformation of the incumbent socio-technical regime to a more sustainable one relies on the entrance of new actors from the third sector. Associations are non-profit organizations that engage in participatory research with academic scientists, users and citizen, public authorities and other organizations to solve wicked problems. In these complex and interactive process, intermediary agents play an important role in articulating visions and expectations associated with change (Kivimaa, 2014, Loconto et al, 2021, Steyaert et al 2015). In that matter, they have a key role in the production, circulation and use of knowledge. Drawing on this hypothesis and since most associations are not eligible to funding through research and innovation policies, a policy instrument is currently experienced in France to support the participation of associations to research and innovation process. A qualitative methodology derived from ASIRPA real-time (Robinson, 2020) is used to assess and amplify the impact of the experimental policy instrument (named Fonjep-recherche or FR). As coordinator of the impact assessment process, I first wrote a narrative of the origins of the experimentation (Lhoste, 2022). I now focus on characterizing the intermediary activities of the associations winning the 2019 and 2020 calls. I participate to the steering committee of the call, to the selection process, and to the events organized for the grant winners. I also achieved 50 interviews and several days of participatory observation (in 3 different locations). The descriptive framework aims at understanding the associations' missions and history, their resources, how they engage in the production, circulation and use of knowledge, and what are their final goals and values. I draw special attention to materialities, networks and relationships to institutions (ESR). Drawing on the literature on intermediations, I will provide a typology of the role of associations in participatory research.

671 MAKING TRANSFORMATION INSTRUMENTS HAPPEN

Britta Acksel (Institute for Advanced Study in the Humanities)

One answer is: trough Transformation Instruments. Transformation Instruments, like Roadmaps, best practice projects, action weeks, sustainability awards and others more are a certain type of what is generally described as "new soft forms of governance". Often, these tools seem to be center stage in the ever more pressing fight against global warming. They are Policy Instruments that seem to be everywhere but are severely criticized, not least of all, because they defy measurement. But how are they made plausible and acceptable, then?

Using the concept of logics proposed by Andrew Barry et al. (2008) I show how six Transformation Instruments in six European, post-industrial cities are established. I illustrate how the interplay of different logics, often concealed by a focus on impact analysis and evidenced based policy, makes them happen. This does not only allow a better understanding about how Transformation Instruments develop, but also reveals assumptions that enable logics to be persuasive and which are continuously enacted through the life of the Policy Instruments, effecting more than just the adoption of the Instrument.

Basis for this is my fieldwork in Malmö (SWE), Essen (GER), Almada (PRT), Brussels (BEL) and beyond looking at how activists, local administration, the European Commission and others use, shape and are shaped by Transformation Instruments. The six Policy Instruments in focus are: the European Green Capital Award, an Idea lab for sustainable development, the Strategic Energy Actions Plan of the Covenant of Mayors as well as three Action Weeks.

936 FUTURE IN VIVO: LIVING LABS AS FUTURE-MAKING POLICY INSTRUMENTS – ENABLING FUTURE INNOVATION BY RESISTING PRESENT CONFLICT?

Anamaria-Ioana Rasenescu (RWTH Aachen University)

Adequate policy responses to grand societal challenges require drastic transformations of technology and society alike (Engels et al. 2019). To tackle these requirements, Living Labs have emerged on all scales and in all sectors, to „re-configure society around a new set of technologies, envisioned futures, and associated modes of governance (ibid). As co-creative innovation and research formats, Living Labs involve a multitude of heterogeneous stakeholders who generate and co-develop an arena for the negotiation and design of future

imaginaries, making Living Labs arenas of organized diversity. Diverging understandings on the appropriate form and function of new technology often lead to tensions and conflicts between stakeholders (Miettinen, 1998; Johnson et al., 2013; Latour, 1996).
However it is still unclear how 'doing future' allows for harnessing the potential for disagreement in Living Lab settings. While Living Labs make social order explicitly available for experimentation (Engels et al.), expectations of envisioned futures and new socio-technical orders require the alignment of opposed expectations and therefore of opposed envisioned future imaginaries. As we consider Living Labs both instruments for future-making, as well as platforms of „organized diversity", our contribution aims at understanding how conflict in new formats of innovation governance interplays with the co-creation of socio-technical futures. Since dynamic environments, such as Living Labs call for dynamic adaptability, the exploration of ambiguity and the production of support structures becomes crucial. Based on 25 guideline-based interviews of local co-creative Living Labs from different policy sectors, we examine barriers and challenges of science-based future-making, such as institutional conditions and methodology. Thereby we reflect on how new modes of future-making policy instruments allow for conflictual processes in the collective construction of futures.

Room N107 - Panel 031 RETHINKING POLICIES AND INSTITUTIONS THROUGH CO-CREATION, USER-DRIVEN INNOVATION & RESEARCH IN THE WILD

Session 3

391 HOW CAN CO-CREATION HELP CITY TRANSFORMATION? BUILDING AN EMPIRICAL UNDERSTANDING OF CO-CREATIVE PROCESSES IN AND OUTSIDE OF HORIZON 2020.

Raphaël Stephens (UMR LISIS - Université Gustave Eiffel) Evelyne Lhoste (UMR LISIS – INRAE) Allison Loconto (UMR LISIS – INRAE) Mireille Matt (UMR LISIS – INRAE) Douglas Robinson (UMR LISIS – CNRS)

We present a study that puts forward and mobilises the concept of co-creation as a lens on many emerging forms through which citizens and civil society are involved in (participatory) processes of innovation outside of conventional institutional research and innovation settings. Our objective is to address knowledge gaps on co-creative processes, such as power asymmetries between citizens/civil society and the other three (research, private and public) spheres of the “Quadruple Helix”, and the marketability or replicability of co-creative outcomes (technological innovation and institutional or behavioural changes). We focus on tangible outcomes such as innovative technologies, services and organisational structures. This study presents findings on fifty research and innovation projects that involve co-creation, drawn from Horizon 2020 (in particular “SwafS” projects) and outside of Horizon 2020, that all address city transformation (energy, food, mobility, environmental management). Through an inductive approach, and seeking commonalities between highly diverse projects all claiming true co-creation, we present and detail two core findings. Firstly, we observe thirteen Traits of co-creation that appear strongly reflected throughout the corpus of projects. These Traits revolve around aspects as varied as holistic approaches, finding common language, citizen motivation, territorial cohesion, data gaps, skepticism, creative freedom, stakeholder hybridity, Citizen Science, prototyping, RRI implementation, value chains and agenda setting. Secondly, we identify some core Venues of co-creative interaction, from open labs or hubs to virtual spaces that, together, host co-creation within digital-material articulations. Identifying these Traits and Venues informs empirically on which factors may facilitate or impede successful co-creation. Throughout our study, we also provide focus on the diversified modalities of citizen engagement, as citizens participate, directly or indirectly, or possibly not at all, in innovation processes where there is claim to the practice of co-creation.

438 LIVING LABS - THIS IS THE WAY?

Stefan John (RWTH Aachen University) Julia Backhaus (RWTH Aachen University) Stefan Böschen (RWTH Aachen University) Anamaria Rasenescu (RWTH Aachen University)

Living Labs (LLs) are heralded as promising platforms outside established R&D settings and as a “new economic, innovation and digitalisation policy instrument” (BMWi 2018). Considered a new form of experiment in the search for sustainable solutions (Caniglia et al. 2017) to grand societal challenges based on socially robust knowledge (Nowotny 2000), they vary greatly in terms of their specific focus and approach. Characteristically, actors depicted in the quadruple helix model (Compagnucci et al. 2021) engage in stages of co-design, co-production and co-evaluation (Wanner et al. 2018).
The frequently invoked quadruple helix model suggests symmetry and hence equality amongst actors. However, negotiating and implementing the goals of Living Labs (Beecroft et al. 2018) and developing solutions to complex societal problems involve processes of „opening up“ and „closing down“ (Stirling 2008) towards actors‘ participation, expertise and values (Meinherz et al. 2021) manifesting (un)equal power distributions. This contribution scrutinises the various distortions of the ‘symmetrical helix model’ ‘in the wild’. The key question is whether and how LLs, as a promising yet underexplored tool (Hossain et al. 2019), are altering dominant institutions and policies shaping technoscience.
To answer this question the research focuses on power structures in Living Labs and takes three analytical steps. Based on 30 in-depth interviews with PIs of LLs at and around RWTH Aachen University, 30 LLs are mapped according to their level of transdisciplinarity. Subsequently, representative cases are selected and analysed following Fritz and Meinherz’ (2020) multidimensional analysis of power with a focus on the interrelatedness and manifestations of power over, power to, and power with. Applying this approach to LLs and their different stages of knowledge production enables an identification of possible interrelations between their level of transdisciplinarity and observable power structures and a discussion of potential pathways towards greater transformative effects on established technoscientific structures.

653 NAVIGATING THE EMPIRICAL AND THE TRANSFORMATIONAL: EMPIRICIZING TRANSITIONS IN TECHNOLOGIES FOR INCLUSIVE EMPLOYMENT

Mike Grijseels (Athena Institute, VU University Amsterdam) Teun Zuiderent-Jerak (Athena Institute, VU University Amsterdam) Barbara Regeer (Athena Institute, VU University Amsterdam)

Technologies are often ascribed the potential to enable a transition to more inclusive employment of people with disabilities. Like many societal changes, inclusive employment requires a transition that is complex, uncertain, non-linear and messy. Scholars suggest an array of methods to deal with such complexity, often revolving around having multiple stakeholders like policy makers, technology developers, end-users and researchers, participate in transformation processes. Reflexive Monitoring in Action (RMA) is one such method for evaluating projects that aim for transformation.

We reflect on our involvement in several experimental niche projects, that aim to foster inclusive employment through technologies in the workplace. Drawing on RMA methods that aim to incite reflexivity and joint learning in stakeholders, we show our attempts to contribute to multiple smaller transformations in the niche. Furthermore, we explore how such transformations can help identify systemic barriers and identify courses of action that make empiricized transformations contribute beyond the individual case. In this paper we specifically explore; A shift in focus from individual needs of stakeholders to stakeholders gathering around an inclusive technology; and a shift from scaling up technology to scaling up ecologies around a technology.

We explore how RMA methods helped with shaping the protected space of the niche, while at the same time translating the lessons learned to help shape the conditions for a wider regime change. We focus on how prioritizing reflexivity and joint learning made moving matters between stakeholders possible. We explore how these dynamics made smaller transformations possible and how these interact with a broader transition towards inclusion. We suggest that through RMA methods, a detailed empirical focus on the dynamics between technology, workplace, employee and colleagues in niche experiments was connected to the shaping of systemic transitions. We call this connecting work ‘empiricizing transitions’.

666 HAPPY FAILURES. HOW STS MIGHT LEARN FROM ‘FAILED’ EXPERIMENTATION IN THE WILD

Gert Meyers (Tilburg University)

Science, society and STS have a strong bias towards ‘success’. It is harder to publish on the absence of a causal relation than on the presence of significant correlations. Companies are happy to announce the start of an experimental pilot with a new technological solution but communicate rarely – if ever – on the experiment not achieving the expected results. Bloor’s 'Strong programme' demands Science and Technology Studies to be impartial (study both successful and unsuccessful knowledge claims), symmetrical (employ the same types of explanation for both successful and unsuccessful knowledge claims) and reflexive (this should be applicable to sociology/STS too). Despite the strong program, most research in STS is tended towards studying successful socio-technical artifacts and knowledge claims. Multiple caveats, hurdles and even outright obstructions are identified yet it is shown how everything holds together against all odds.
This paper wants to shed a renewed attention to the demand for impartiality and symmetry in STS, by paying attention to productive non-succes or ‘happy failures’ in economic experimentation in the wild. First of all, employing Austin’s distinction between happiness and unhappiness, attention will be demanded for the qualifications of success/failure. Even though an economic experiment might not achieve successful knowledge claims, this does not mean that the economic experiment as a whole failed. It can be ‘happy’ in other ways. Secondly, some methodological challenges for the study of ‘failed experiments’ will be highlighted, as it looking for failure might disregard the need for impartiality and symmetry in its own right.

424 PAVING THE WAY TO TRANSFORMATIVE SCIENCE - A STUDY ON SUCCESS FACTORS FOR INTEGRATING SCIENCE AND SOCIETY IN UNIVERSITY-DRIVEN INNOVATION LABS

Sophie Kaiser (Karlsruhe Institute of Technology, Institute of Technology Futures) Tobias Held (Karlsruhe Institute of Technology, Institute of Technology Futures) Felix Schneider (Görgen & Köller)

Transdisciplinary research is gaining momentum and increasingly blurs the boundaries between academia and society. Being faced with pressing global challenges, „transformative science“ draws upon transdisciplinary methodology pursuing to address these challenges and rendering direct social impact based on normative objectives of societal relevance. This conceptual approach promotes a cultural change in science and contributes to a shift in how research is conducted and in how science is opened up to stakeholders outside academia. To facilitate this process, innovation labs at universities and research institutes can serve as a means to actively shape the interface and enable interaction between academia and societal actors. Based on this observation, our study addresses the questions: Which conceptional approaches are applied in university-driven innovation labs in Germany, and how can transformative knowledge transfer processes be successfully realized on a practical level?
To answer these questions, a comparative case-study of more than 70 innovation labs at German universities and research institutes was conducted. Furthermore, a total of nine innovation labs was selected for in-depth investigation by conducting semi-structured interviews with managers of the innovation labs. As a result, we derive success factors comprising characteristics and processes for the integration of science and society in innovation labs.

These success factors can be found on three levels. These are (1) the individual level (i.a. skills, methodical competence, knowledge, networks), (2) the institutional level (i.a. structural integration of innovation lab within university, corporate culture, corporate support for transdisciplinary research), and (3) the systemic level (i.a. regional embeddedness of the innovation lab, target group orientation, stakeholder involvement). Our findings suggest interventions on all three levels to enable transdisciplinary co-learning and co-creation.
This research is part of the research project “TRANSFORM – The Transformative Institute”, which investigates pathways for implementation and institutional alignment of transformative science in German academia.

Room N112 - Panel 039. THE POWER OF TECHNOLOGICAL PROMISES: QUANTUM TECHNOLOGIES AS AN EMERGING FIELD

Susannah Glickman (Columbia University - Department of History)
Zeki Seskir (Karlsruhe Institute of Technology - Institute for Technology Assessment and Systems Analysis (ITAS)

New technologies and the technological promises that accompany them often seem to offer opportunities for profound transformations of the existing hierarchies, institutions, and established norms. They offer social scientists a window into moments when those promises and narratives are still in flux and being tailored to the interests and needs of potential audiences. In this sense, the emerging quantum sciences are presented as a possible area of contestation for shifting techno-economic relations on the international level. However, major transformations are never contained in the strict bounds of international relations and geopolitics. There have been ongoing efforts to democratize these technologies, and the public interest has been growing steadily since such devices became accessible through cloud access by IBM in 2016.

The field of Quantum Computing and Information (QC) emerged as the product of the paradigmatic Cold War Sciences--Computing, Quantum Mechanics, and Information Science--and paralleled the development of classical cryptography and computing. QC seeks to exploit the properties of quantum mechanics--such as superposition and entanglement--to produce computers or other technologies capable of surpassing the computing ability of classical computers. Practitioners offer competing models of how such computers might be built and have different ideas about what the potential of such computation power would mean, and what sort of future it portends. Functional quantum computers now exist, but none have enough “qubits” or technical capabilities to realize the grand promises of QC. In the past few decades, practitioners in QC have transmuted their field from science fiction into institutionalized fact. Even though working quantum computers fulfilling the promises of the field do not yet exist, both governments and private industry have been pouring money into QC. Since governments worldwide believe QC poses an important national security concern, QC is funded not only by giant tech companies such as Alibaba, Baidu, Google, Microsoft, and IBM but also by state actors like the US, China, EU, and Israel. The US government alone proposed about $1.3 billion for QC while the global public spending is expected to exceed $20 billion.

This panel aims to understand this new project and the conditions of its possibility. How do such scientific fields move from science fiction to institutions? What kinds of technological promises successfully create networks invested in building these institutions? What specific infrastructures need to be in place? What promises does this new field make, what mode do actors articulate them in, and how do they become credible? We welcome researchers from any field of study that wishes to contribute to this discussion.

Session 1

940 COLLIDE, ACCELERATE, AND INVITE ARTISTS AS GUESTS: 10 YEARS OF ART AND SCIENCE COLLABORATIONS AT CERN

Diogo Henriques (Faculty of Arts, Aarhus University)

In this paper, we present a critical review of the existing literature studying the art and science collaborations from 2011 until 2021 at the European Organization for Nuclear Research (CERN, from the ‘French Conseil Européen pour la Recherche Nucléaire’), one of the most significant and largest centres for scientific research in the world, located near Geneva, Switzerland. More specifically, we analyze scientific literature and non-scientific sources mentioning CERN’s three main programmes: (1) Collide; (2) Accelerate; and (3) Guest Artists. Can art and science collaborations be a key to solving the complex societal and climate crisis facing humanity in the 21st century? Specifically considering quantum technologies, what promises can art and science collaborations make, and how do they become credible in public institutions?
Using an established methodology from the digital humanities, this critical review gathers information about 10 years of art and science collaborations at CERN, by combining close and distant reading of scientific literature (e.g. peer-reviewed journal articles, conference papers) and non-scientific sources (e.g. artists manifestos, portfolios, exhibition catalogues, social media). Our study shows how the emerging quantum science and art collaborations in this ten-year period at CERN can be seen as a potential field of contestation for shifting techno-economic relations at a global scale. Moreover, it is also a case study that allows an understanding of how scientific fields can move from science fiction to institutions through the collaboration of artists and scientists, and more recently additional intuitions in other European countries. In addition, it also shows how technological promises can successfully create international networks and the specific kind of infrastructures that are needed to make these technological promises happen.

192 FROM SCIENCE FICTION TO INSTITUTIONAL FACT

Susannah Glickman (Columbia University)

This paper will explain the remarkable success of a network of famous to fringe scientists (physicists, computer scientists, mathematicians and chemists) who took a hobby interest with no tangible product, and convinced the US government, and the broader world that quantum technologies were not science fiction but instead a future worthy of investment. This development reveals a considerable amount about the transformations taking place in the broader post-Cold War imperial American scientific structural environment. The success of the field of QC is remarkable because it defies the transformations of the 1980's US scientific structures such as "the decline of corporate basic research, [and] the shortening of the time span in which research is expected to find technological application or have 'broader societal impacts.'" QC research was by contrast long term, speculative, and lacking in concrete applications for most agencies. Likewise, this success conflicts with the cost-benefit logic of the planning documents produced by funding agencies. The fact that, despite these tensions, QC becomes so important to the national security state and to global power requires explanation. This account defies the standard historiographical understanding of post-Cold War American science.
I will argue that Moore's Law, and the use by scientists of other colloquial histories of computing and science, created the conditions necessary for QC to be taken seriously, funded, and conceived as a crucial national security goal. Quantum practitioners have been successful at controlling their history to direct and bring about their vision of the future. They have avoided relying on the construction of actual devices to build a substantive industry. QC is a particularly pronounced example that gives insight into the mechanisms and historical conditions behind this scientific network's extraordinary accomplishment. QC became a site of a projected and attempted resolution of several political, social, and disciplinary problems at once.

602 INFRASTRUCTURING A PROMISE: "UNCONDITIONAL SECURITY" IN QUANTUM COMMUNICATIONS PRACTICE

Camilo Castillo (Linköping University) Alvaro Alarcón (Linköping University)

Properties of quantum mechanics such as entanglement, superposition and teleportation have been tested in diverse laboratory experiments around the world. As an outcome of this, quantum communication has emerged as a promising area, where the properties of quantum mechanics can contribute to the creation of highly secure communication systems. Quantum communication has promised "unconditional data security" between two or more users by using the fundamental properties of quantum mechanics, and not relying on classical mathematical constructs to provide security as reported in the literature. This promise has motivated the scientific community to the point that quantum communication has been able to produce successful experiments, involving long distances and using "different degrees of freedom of physical systems" to encode information. However, technological limitations and the lack of ideal experimental conditions have made the initial promise of "unconditional security" difficult if not impossible to achieve.

Although this is a prominent promise in quantum communication, it would be rather narrow to assess this field in terms of whether the promise is being fulfilled or not. We suggest instead that it is more important to analyze how the promise is translated in the mundane setting of laboratories involved in those kinds of projects. As part of an ongoing ethnography in a quantum communication lab, we explore the scientific practices that configure and reconfigure the infrastructure and network where "unconditional security" unfolds as a promise of quantum communication. With this, we aim to open a situated and material understanding of quantum technologies promises as a fundamental elements of the infrastructures that give rise to "ontological experiments" (Jensen & Morita, 2015) where multiple human and non-human agents engage and produce new arrangements of the real.

Jensen, C. B., & Morita, A. (2015). Infrastructures as Ontological Experiments. Engaging Science, Technology, and Society, 1, 81–87.

470 'QUANTUM SECURE' AS AN EMERGING TOPIC: A LANDSCAPE STUDY

Zeki Can Seskir (KIT-ITAS)

As rapid developments in quantum computation are being celebrated by many in the field of quantum technologies, the issue of an impending quantum threat (when a large enough quantum computer with capabilities to run Shor's algorithm) is becoming a more valid point of discussion. There are several hardware companies in the quantum computation business promising 1+ million qubits by 2030, and there are recent proposals of Shor's algorithm being run on such devices, hence we are at the crossroads where predictions and research are in alignment. There are several efforts to tackle the quantum threat, such as the NIST standardization rounds on post-quantum algorithms that have been running since 2016 or the development of small-scale metropolitan quantum networks capable of distributing quantum states (hence allowing quantum key distribution). In this talk, we will present preliminary findings of an ongoing study on landscaping these developments, and how 'quantum secure' is becoming an emerging topic on its own.

Room N105 - Panel 050. Ferment(n)ation: Future Microbiopolitics in the Field of Gastronomy (special format)

Iñaki Martínez de Albéniz (UPV)
Elena Urieta Bastardés (UCM)
Juan Carlos Arboleya

See Abstract in Special Formats

Room N109 - Panel 053. DATA ANALYTICS IN SCIENCE – WHAT IS AT STAKE?

Anne K. Krueger (Berlin-Brandenburg Academy of Science and Humanities)
Sabrina Petersohn (German Centre for Higher Education Research and Science Studies)

The datafication of science and its algorithmic assessment are accelerating at a rapid pace. The digitization of academic publishing jointly with technological developments such as greatly increased storage and computing capacities as well as advanced data harvesting techniques have opened up an abundance of new data sources that are referred to as information about research “output”, “impact”, and “performance”. Besides publications and their citations, data about related research organizations, grants, patents, and clinical trials as well as about views, clicks, downloads, or mentions on social media platforms are increasingly becoming available. Persistent identifiers such as the DOI for publications, the ORCiD for authors, or the ROR for organizations moreover contribute to interrelating these data through unambiguously identifying research output and researchers.

This constant growth of data has triggered an unprecedented development of open and commercial databases and data analytics tools and devices turning the provision of research information and evaluation into “a crowded marketplace” (de Rijcke & Rushforth 2015). Private companies and community-based initiatives constantly generate new ways for extracting and assessing data while arguing for the benefits of the “retrievability”, “traceability”, and “accountability” of research and researchers. The increasing and rather uncontrolled aggregation and interrelation of data about researchers and their work, however, raises questions on the ways and consequences of the sociomaterial interplay between technology, its providers, and its users and the political economy behind it: How and by whom are these data and the respective devices provided and put into use? And how do they affect the understanding and (e)valuation of science?

The panel invites contributions that (1) address how these data and data analytics affect research and researchers, (2) discuss data politics regarding access, ownership, and questions of data protection, (3) investigate how the rationales and functionalities of data analytics influence evaluation practices, or (4) focus on the marketization and assetization of data on research and researchers within and beyond academia.

Session 1

325 USING DATA FROM RESEARCH INFORMATION MANAGEMENT SYSTEMS IN BIBLIOMETRICS

Barbara S. Lancho Barrantes (University of Leeds)

Research information management systems (i.e. Symplectic) have facilitated institutions, librarians, and researchers to keep in one place all the records of institutional research performance. Among the multiple benefits of these centralised data sources are the ability to collect and deposit a variety of types of data not only about publications (i.e. accepted journal articles, conference papers, preprints, etc.) but also about grants, professional activities, etc. everything is integrated for a better informed decision-making. Researchers can enter manually their bibliographic metadata and details for all research outputs into these systems; deposit a full text copy and link the output to any associated funding keeping the productivity united. Otherwise, researchers can harvest symplectic automatically through ORCID. By default Symplectic claims any records including in ORCID. ORCID can help with the challenges of disambiguation of names. Researchers can manage this, or revoke permission, at any time. The publications will add to university repositories to help research visibility after verification by library staff. This has led organisations can easily access to these systems and perform analysis with the data deposited there. For research evaluation purposes, this is extremely beneficial as we could consider a variety of outputs including but not limited to, research articles, reviews, monographs, data, reagents, software, complying with DORA principles however do researchers have concerns of their data being used? Would this have to do with the preferences of researchers? And also how sure are we that the stored data is accurate? The difficulty in associating publication with correct authors is well known in Bibliometrics and it introduces inaccuracy in indicators in the attribution of scientific discoveries and author credit, and discovery. The main hypothesis is these preferences and reluctances could differ among disciplines, researcher stages, gender, geographical backgrounds, etc. We must be transparent in the evaluation process and involve researchers.

924 FROM PAYWALL BUILDERS TO DATA TRACKING MOGULS. HOW THE BIG ACADEMIC PUBLISHERS HAVE PUT ON A NEW SUPER VILLAIN COSTUME.

Torny Didier (Centre de osciologie de l'innovation (CSI)(, UMR 9217, CNRS, France)

From the 1980s onwards, the concentration of the academic publishing market accelerated, until an oligopoly emerged, at least in the fields of science, technology and medicine (Larivière, Haustein & Mongeon, 2015). The effects of this concentration have been well described: increased market power in negotiations with libraries that produce gigantic profits, a reduction in bibliodiversity, especially on the linguistic front, a weakening of smaller

publishing structures, which felt forced to use Big Publishers services, at least in terms of electronic dissemination and rights management, and finally the limitation of the circulation of scientific knowledge, which remained locked behind paywalls.
The open access revolution has not fundamentally changed this situation. On the contrary, the big publishers have taken advantage of their immense cash flow to buy up full open access publishers and other infrastructures in the scientific publication and information ecosystem (Posada & Chen, 2017). This allows them not only to avoid the emergence of competitors, but to create centralised information systems covering manuscripts, reviews, scientific data & metadata, researchers, their preferences (alerting systems, reviewing skills) and their most diverse uses (reading, downloading, referencing, intertextual circulation). As a result, these companies describe themselves less and less as publishers and more as information data companies, notably Elsevier.
By developing a controversy analysis, this presentation depicts the empirical strategies of uncovering and analysing data tracking practices (PDF metadata analyses, GDPR requests, sale of usage data tracking, see DFG, 2021), the spaces of comparison and theories used to qualify big publishers (e.g. surveillance capitalism, Pooley, 2021). It will also examine the responses of big publishers, in particular the stigmatisation of Black Open Access as a data theft scheme and the defence of centralised information systems in the name of their benefits to the academic communities.

961 THE RISE OF IMPACT: GROWING THE SAME OR OTHERWISE IN SCIENCE AND SCIENCE POLICY

Guus Dix (University of Twente)

Over the past ten years, ‘impact’ emerged as an inevitable, yet controversial phenomenon in academia. The rise of impact (TROI) covers a range of epistemic and political practices to measure and increase the contribution of research to economic growth and societal challenges (Irwin, Vedel, & Vikkelso, 2021; Kuhlman & Rip, 2018). Policymakers and policy experts emphasize the political opportunities of TROI saying that they can now take the lead in steering researchers towards relevant outcomes (Mazzucato, 2021; Wallace & Rafols, 2015). There are worries, however, that such steering attempts foster scientific research that fits the salient political definition of ‘impact’ to the detriment of research that does not. European policymakers, for one, currently embrace broader environmental objectives without abandoning objectives to make science and technology contribute to the economy (Berman, 2012). There are good scientific reasons, however, to think that these objectives are at odds with one another (Duflo & Banerjee, 2016; Smil, 2019; Wiedmann et. al., 2020). The political openness to research that fits dominant ideas of innovation-driven ‘green growth’ might lead to the exclusion of research on de-growth or on other substantial changes in our culturee (Hickel, 2021; Hickel & Kallis, 2020; Kropp, 2021 Ossewaarde & Ossewaarde-Lowtoo, 2020). Against the twin crises of climate change and biodiversity loss, I will elaborate on a research project in the making that examines the political and epistemic ramifications of an impact regime in science and science policy geared towards growing the same, not otherwise.

993 NARRATIVES OF OPEN SCIENCE: A DISCOURSE ANALYSIS

Parissa Mokhtabad Amrei (Chalmers University of Technology)

Open science as an umbrella term including open data, open content, open source software, citizen science and e-research practices is widely discussed both within academic disciplines and outside. These practices are materialized by digital infrastructures which embody a certain kind of numerical logic and thus engendering a specific kind of scientific knowledge and practices. I assume that this logic is partly represented in the discursive narratives within scientific texts in the field of open science. Therefore, in this research, I ran a discourse analysis of these narratives by conducting a configurative systematic review of open science. Within the narratives of open science, I investigated three questions. Firstly, how the logic of practices in open science is being described. Secondly, how the physical infrastructure and materiality of open science are discussed. Thirdly, what temporality the studies have. And finally, to which scientific discipline and practice they belong to. By doing this research, I aim to contribute to the existing STS literature in the fields of materiality and politics of open science.

993 COMMERCIAL DATA ANALYTICS TOOLS: POLITICO-ECONOMIC, EPISTEMIC AND ONTOLOGICAL IMPLICATIONS

Maria Amuchastegui (York University) Kean Birch (York University) Wolfgang Kaltenbrunner (Leiden University)

The makers of commercial data analytics tools claim that their tools permit non-technologists to access the promise of Big Data. STS scholars who seek to analyze large datasets using the novel methods of Big Data usually collaborate with scholars who have expertise in computer science. Commercial data analytics tools, in principle, provide a more self-sufficient way to create STS knowledge. In this paper, we discuss the politico-economic, epistemic and ontological implications of using commercial data analytics tools to create STS knowledge.
Our analysis was based on our use of a commercial tool, IBM SPSS Modeler, to identify STS concepts in a large dataset. In its sales manuals, IBM describes SPSS Modeler as a Big Data tool. We argue that this characterization is apt, as it calls attention to the increasing privatization of both data and data analytics tools. Unlike the similarly

named SPSS Statistics, which originated in academia and which social scientists have been using since the 1960s, SPSS Modeler originated in private industry. To the best of our knowledge, it has not yet been used for STS research.

Our approach was quali-quantitative in that we used the analytics tool to identify concepts computationally and then built a topic model based on human expertise. Bail argues that, to track cultural changes in Big Data, the computational methods of computer science must be combined with a qualitative analysis that is informed by the expertise of social scientists.

Our assessment of the tool occurred as part of a larger project to identify political-economic and epistemic changes within STS, focusing on academic publishing. These epistemic changes were identified qualitatively, through 76 interviews with STS scholars, and quantitatively, through a computational analysis of three decades of STS journals (1990-2019).

Room N114 - Panel 054. ENVISIONING CODED FUTURES: ALGORITHMICALLY SHAPED PRESENTS AND FUTURES OF HUMAN-MACHINE-RELATIONSHIPS

Session 2

645 SHAPING RESEARCH WITH HUMAN-MACHINE-RELATIONSHIPS

Lina Franken (LMU Mmunich)

Research within present and future settings includes ever-growing usage of digital methods, modules, data or platforms. The evolving communities of practice in digital humanities (DH) and computational social sciences (CSS) both seek to enrich humanities respectively social science research with computational approaches and automatization. Ethnography and STS are slowly evolving within these communities, living in the in-between of both of them and reflecting on the changing epistemic cultures (Knorr Cetina 2003) established here. Software and scripts are often realized by others, so that when researchers move onwards to computational methods, they need to “trust others to do the math” (Sutton Koeser 2015) because of the inherent power of algorithms not being understandable or even visible for researchers using an application. Algorithmic assemblages (Introna 2016) are at work, with liquid and fragmented elements and agents forming and re-forming datasets and epistemologies. Research realized with new infrastructures and devices is highlighted as experimental, performative and having inherent ambivalences and ambiguities (Marres & Gerlitz 2016; Rogers 2019). Tools and technologies employed are never theory-neutral but interwoven with the methods of inquiry employed (Paulus & Jackson & Davidson 2017). As Kinder-Kurlanda & Weller (2015) show for social media research, much of the technical knowledge is embedded into everyday practices and therefore not shared with others.
The paper is based on ethnographic research conducted in the communities of DH and CSS from 2018 onwards. It focusses on the experimental role human-machine-relationships play within the modelling of future digital methods. The relations and learning possibilities of DH as well as CSS in many ways include more-than-human relationships but set a strong focus on human researchers creating computer code and building on existing infrastructures, both containing coded sociotechnical systems. The paper focusses on how research includes human-machine-relationships and how experimental approaches are envisioned within these intra-relations.

440 CALLING APIS DIFFRACTIVELY: IMAGINING RELATIONAL READINGS OF CODE

Rabea Kleymann (Leibniz-Zentrum für Literatur- und Kulturforschung Berlin)

Although sociotechnical systems based on code shape our datafied society, providing access to functionalities and data is still challenging. Application Programming Interfaces (APIs) are therefore gaining more and more relevance. APIs structure not only interactions between software applications, but also mediate between humans and computer systems, for example, in form of information retrievals. Notably, the documentation of APIs give insights into the entanglements of data capturing, algorithmic procedures and other infrastructural parameters. But from a methodological perspective, one issue seems to be how can we address such types of access. In this submission, I argue that diversifying the methods used to inspect code and data could be one way to engage with sociotechnical systems, e.g., APIs. While Sheila Jasanoff presents six methodological pointers to examine sociotechnical imaginaries, I propose Karen Barad’s diffractive reading as a further method.

In Barad’s approach called agential realism, she outlines the method of diffractive reading. Suggesting a radical relationality that undermines the distinction between humans and machines at first place, diffractive reading conceives epistemic objects as inference patterns. The thesis of this submission is that diffractive reading is a highly adaptable processual method for studying APIs. Software, algorithms and data settings are not only made legible and negotiable through the relations they produce. Rather, diffractive reading allows to reimagine accountabilities of boundary-drawing, for example, the contextual integrity of coded systems. What becomes meaningful for whom or what in using for example this standard library or that algorithm, and what is in- or excluded? What framework need to be mobilized to deliver certain data? Presenting diffractive readings of REST-based Web APIs from cultural institutions, I explore scopes and limitations of Barad’s method in practice. Accordingly, I read the documentation of different GLAM APIs as socio-mattering configurations, and compare queries and responses of APIs calls through code.

117. ALTERNATIVE SEARCH. ENVISIONING AND ENCODING SOCIAL JUSTICE IN EUROPEAN SEARCH INFRASTRUCTURES

Astrid Mager (Institute of Technology Assessment/ Austrian Academy of Sciences)

Google has a market share of 92,99% in Europe. It has thus been criticized not only for its ranking algorithm, its non-transparency, and its business model, but also for its quasi-monopolist position on the (European) search engine market. Over the past years, however, European policy and civil society have started to act up with legal

frameworks and court cases to gain control over Google, and other big tech companies, and their business practices. The right to be forgotten (RTBF), the general data protection regulation (GDPR), or the recently suggested artificial intelligence act (AI act) can be considered important steps towards this noble goal. But is this European “politics of control” (Mager 2018) enough? What about developing independent infrastructures devoted to social justice rather than profit? This question will be discussed by analysing three alternative search engines based in Europe: the privacy-friendly search engine StartPage, the open source search engine YaCy and its sister project SUSI.AI, and the initiative Open Web Index trying to develop an independent index of the web open to the public. Drawing on a rich repertoire of qualitative interviews, participatory observations, online materials, and joint workshops with the three developer teams, as well as theoretical concepts from science and technology studies, critical data studies, and values by design I will explore what visions, or “counter-imaginaries” (Kazansky and Milan 2021), are driving these projects, how they get encoded in search infrastructures, what challenges and compromises occur in these sociotechnical practices, and what role data play in strategies of scaling. What framework conditions, e.g., funding structures, would be needed to let these projects grow out of their niches will be finally discussed.

762 MATERIALIZING FUTURES. FAIRNESS AND DIVERSITY IN AI DEVELOPMENT AS SOCIOTECHNICAL IMAGINARIES.

Fahimi Miriam (Digital Age Research Center, University of Klagenfurt) Poechhacker Nikolaus (Digital Age Research Center, University of Klagenfurt) Kinder-Kurlanda Katharina (Digital Age Research Center, University of Klagenfurt)

An increasing number of cases of algorithmic bias has sparked a lively debate about normativity and values of algorithmic systems in the scientific community and the public (Benjamin, 2019; Crawford, 2021; Buolamwini & Gebru, 2018; Birhane 2021). This debate revolves around concepts such as transparency, accountability, and fairness. With our presentation we contribute to this ongoing discussion with a focus on the role of organizations in and as well as perspectives of public and private actors. Drawing on the analytical concept of "sociotechnical imaginaries" developed by Sheila Jasanoff and Sang-Hyun Kim (2015), we show how organizations take part in the negotiation processes of the vision “of how life ought, or ought not, to be lived” (Jasanoff 2015: 4). Our presentation is based on two ethnographic in-depth studies in the context of AI development: one study was conducted in a private credit scoring company, where the ethnographer was involved in a project on fairness in credit scoring algorithms. The second study aimed at exploring implementation practices of a recommender system guided by the ideal of information diversity in a public service broadcasting. Here, the public actor anticipated diversity in recommendation systems and wanted to prevent be(coming) unconstitutional. We argue that these actors react to anticipated regulations, even if there are no manifest legal issues or if the regulation is not yet in place. By mobilizing popular discourses in expert communities and the general public the actors address an imagined future, in which these regulations might become problematic to their business model. By these anticipated regulations they try to establish their solutions as material discourses through which the sociotechnical imaginary of fair credit scoring or diverse media spaces is attained.

Room N108 - Panel 055. INFERENCE WORLDS: POLITICS OF MACHINE LEARNING FUTURES

Session 3

42 THE UPEND OF THEORY: CORRELATIONISM AND STOCK PREDICTION IN THE ERA OF MACHINE-DRIVEN BIG DATA ANALYTICS

Kristian Bondo Hansen (Copenhagen Business School)

In his now famous 2008 Wired Magazine article 'The end of theory: the data deluge makes the scientific method obsolete', Chris Anderson, the magazine's editor-in-chief at the time, provocatively proclaimed that scientific practice was about to be disrupted by big data analytics approaches to problem-solving, which would reduce established scientific methods to relics of the pre-big data science era. Since its formulation, Anderson's end of theory hypothesis has been met with much criticism and even ridicule by STS, critical data studies, and other scholars studying big data and machine learning use in science, industry, and society. However, as acknowledged by most critics of Anderson's hypothesis, theory-void big data-analytics approaches are increasingly being presented as superior in problem-solving, regardless of whether problems lie within the realms of science, business, politics, or elsewhere. In this paper, I do not want to argue an impending obsolesce of theory, but instead call to caution against a flattening of categories and instrumentalization of theory in- and outside the confines of the world of science. Evidence of this epistemological shift from theory- and analytical category-driven approaches to research towards more instrumental big data-driven correlationism, exudes from many places—Bruno Latour's almost entirely uncritical hailing of big data network analysis as a window to the real workings of the social being an illustrative example from STS—, yet I focus on experimental deep neural network-models for stock prediction. Examining the way theory—more specifically, the so-called Elliott Wave Principle (a scientifically questionable theory developed by the American accountant Ralph Elliott in 1934)—is perceived and used in academic articles leveraging such models in stock price prediction experiments. The theory-use in these data science stock-prediction studies dilutes, I argue, the concept of theory and reduces it to a mere name in a recognizable pattern in a dataset.

336 AUTOMATING AFFECT: MAPPING PRACTICES OF EMOTION AI

Benedetta Catanzariti (University of Edinburgh)

Emotion Artificial Intelligence (EAI) is a subfield of AI claiming to detect, measure, reproduce, and react to human emotions. EAI builds on affective computing (a field bridging computer science, psychology, and cognitive science) and advances in machine learning. Facial expressions, speech utterances, gestures and body movements are captured by cameras and sensors in the attempt to categorize, analyze, predict, and even manipulate human behavior. Commercial applications of EAI include monitoring emotional and mental states of patients for improved health care delivery, illuminating (and nudging) consumer behavior in the retail sector, and monitoring drivers' attention to enhance road safety. Other suggested applications include monitoring emotional states of people in airports, public spaces, and borders for security reasons.
What makes possible the idea that machines could recognize human emotions is a popular notion of contemporary psychology: the theory, developed in the 1960s by psychologist Paul Ekman, that there is a set of discrete, fixed, and quantifiable emotions universally conveyed through the same patterns of facial expressions. Similarly, EAI systems use machine learning algorithms to track the shape and movement of facial features and compare them to images of facial expressions stored in a training data set and labelled as specific emotions. Through this "inferential depth" model (Stark and Hutson, 2021), the face is treated as information that can be extracted from its context and separated from the subject's intentions, in order to provide a reliable, "objective" understanding of human emotions. Moreover, work in Critical Data Studies has shown that design choices about the affordances of affective technologies can facilitate the stabilization of particular logics of feeling, encouraging users to conform to a hierarchy of emotions aligned with dominant socio-cultural norms. Drawing on interviews conducted with EAI practitioners, this talk aims at mapping the practices and epistemologies of emotion recognition systems.

409 EVERYTHING IS A PARAMETER: MACHINE LEARNING AND THE EMERGENCE OF SYNTHETIC DATA

Benjamin Jacobsen (Durham University)

Machine learning algorithms have become deeply embedded in contemporary society. As such, ample attention has already been paid to the contents, biases, and underlying assumptions of the training datasets that many algorithmic models are trained on. Yet, what happens when algorithms are trained on data that is not real, but instead data that is 'synthetic', not referring to real persons? Increasingly, synthetic data are being incorporated into the training of machine learning algorithms in various societal domains. There is currently little understanding, however, of the role played by and the ethicopolitical implications of synthetic training data for machine learning algorithms. In this article, I explore the politics of synthetic data through two central ideas: firstly, synthetic data promise to emerge as a rich source of exposure to variability or variance for the algorithm. Here, I argue that synthetic data is intrinsic to the paradigmatic shift of deep learning. Secondly, the paper explore how synthetic data promise to place algorithms beyond the realm of risk. As such, an analysis of these two areas will help us better understand the ways in which machine learning algorithms are envisioned in the light of synthetic data, but also how synthetic training data can be seen to reconfigure the condition of possibility for machine learning in contemporary society.

713 CLOSE TO THE METAL: A MATERIAL INVESTIGATION OF MACHINE LEARNING

Ludovico Rella (Durham University)

In the field of the social studies of artificial intelligence, hardware architectures are often overlooked (Cf. A. MacKenzie and Munster 2019; Stilgoe 2018; Taffel 2021). This paper argues that hardware is an inescapable place where to study the material conditions of possibility for AI and Machine Learning. Furthermore, if one has to approach machine cognition as radically "other" from human cognition (Fazi 2019), then the specificities of hardware architectures need unpacking to unearth how machines come to "think", and how human and machine thinking alike is changed by adopting different computational supports (Mühlhoff 2020). Based on close reading of computer science and history of computing literature, this paper focuses on Graphic Processing Units and their history (Das and Deka 2016). In particular, the paper investigates the influences of Graphic Processing Units on Machine Learning's epistemological, material, and world-making properties. First, it shows how the orientation of GPUs towards images – which are turned into pixel matrices – has influenced early ML's epistemological orientation towards data (Azar, Cox, and Impett 2021; A. MacKenzie and Munster 2019). Second, it shows how the materiality of GPUs produces specific material political economies (Prytkova and Vannuccini 2022), i.e., regimes of production and accumulation where "micro-level" design choices have macro-level effects in terms of competition and centralisation of resources (D. MacKenzie 2017; 2021; Dourish 2017). Third, by showing connections between videogames, GPUs, and Machine Learning simulation applications, it is shown how GPUs have a world-making capacity which, in turn, influences their application in simulations and other task aimed at modelling and apprehending complexity.

833 MACHINE PEDAGOGY: CLASSIFICATIONS AND EXPECTATIONS OF EGOCENTRIC MACHINE VISION CAPABILITIES

Isak Engdahl (Department of Sociology, Lund University)

Egocentric 4D Perception (Ego4D) is a new massive-scale dataset and benchmark package for computer vision (CV). CV is a branch of computer science that deals with making computers acquire visual capacities for various artificial intelligence (AI) systems. The dataset contains recordings of daily life from first-person viewpoints, which differs from the standard observational standpoint seen in CV. Datasets shape opportunity structures by directly determining the substance of sought-after algorithms that may later be made mobile. In this contribution, I draw on STS sensibilities to unpack the construction of this dataset as a scientific object by examining the scales, classifications, benchmarks and expectations ascribed to it. I show how the machine gaze has been socially curated in accordance with specific assumptions that bring practical implications to bear on the sensing modalities. In order to achieve machine-readable translations of the footage, descriptive data labelling enacts distinct realities. It is integral to impose visibility, difference, and similarity on datasets to render them performative. The dataset, in particular, indexes an ever-changing world in an object-centered rather than relational, and action-centered rather than hermeneutic style. As actors determine the agenda, the annotation of datasets, the style of benchmarks, and the encoded logic of the machine gaze, the multiple politics inherent in doing science and technology become fully visible.

Room N110 - Panel 062. MAKING SCIENCE IN PUBLIC: STUDYING SCIENCE COMMUNICATION AND PUBLIC ENGAGEMENT

Sarah R Davies (University of Vienna, Austria)
Noriko Hara (Indiana University, USA)
Maja Horst (Technical University of Denmark, (Denmark)

Science communication and public engagement with science are key mechanisms by which scientific knowledge is mediated, negotiated, and transformed. Over the past decades, STS research has outlined the ways in which science and society are co-produced through public communication activities and catalysed a shift towards dialogue and engagement in science communication practice. More recently, issues of representation, exclusion, and contestation have risen to the fore in discussions of science in public, as well as concerns about public (dis)trust in expertise, the dizzying impacts of social media, and debates about science's role in political activism and resistance.

This open panel invites paper proposals that analyse these ways that science is represented, transformed, contested or negotiated in public venues, in particular by paying attention to how this relates to the politics of technoscientific futures. Papers may explore, for instance, science and technology-related activism; science in social media; science in museums; deliberative experiments; popular science writing; science blogging; news media; or science comedy – as well as the myriad other sites and mechanisms by which science is done in public. We invite critical analysis of these sites and mechanisms that consider their relationalities and how particular futures are enacted and negogiated within them. For example, papers might analyse the constitution of technoscientific futures within particular science communication activities; discuss affective or temporal regimes of public engagement with science; or give accounts of experimental practice that show how STS might contribute to doing science in public in just, generous, and collaborative ways.

Session 1

957 LOCAL PUBLICS, GLOBAL IMPACTS: THE CHALLENGES OF PUBLIC ENGAGEMENT IN RISK ASSESSMENT FOR GENE DRIVE TECHNOLOGY

Aleksandra Stelmach (University of Exeter) Sarah Hartley (University of Exeter) Robert Smith (University of Edinburgh)

Gene drive is an emerging biotechnology designed to rapidly spread genetic traits through populations of sexually reproducing organisms. Although gene drive animals are developed in 'local' contexts, for example for malaria control in Uganda or grey squirrel management in Scotland, they are designed to spread and will not respect national boundaries. This makes gene drive a 'global' technology requiring international cooperation. To prepare for field trials, regulators and risk assessors are collaborating internationally to develop risk assessment frameworks with the aim to have globally harmonised frameworks. The gene drive community has explicitly committed to public engagement in risk assessment. However, risk assessment is a highly technical space dominated by experts and there are few example of engagement. Prior research in risk assessment for GMOs suggests considerable resistance from risk assessors to invite publics into the development of guidelines for risk assessment and/or individual risk assessments for GM animals/plants. Importantly, it remains unclear how globally harmonised and technical risk assessment frameworks will be able to engage local publics. This project addresses this gap by understanding how key stakeholders envisage public engagement in risk assessment. We explore how actors envisage risk assessment and how they define the challenges of engaging local publics to inform risk assessment frameworks with global impacts. We draw on 40 qualitative interviews with stakeholders based in the US, EU and Africa, including regulators, risk assessors, government agencies and international organisations, funders, NGOs, gene drive developers as well as opponents of this technology. We ask participants: 'what is risk assessment', and 'who, how and why should different actors be included in risk assessment'. Our study contributes to the politics of opening up the under-researched and highly technical space of risk assessment to gain a better understanding of the challenges involved with engaging local publics in global governance frameworks.

681 MEDIATING PUBLIC ENGAGEMENT WITH COVID-19 ON REDDIT

Frauke Rohden (University of Oslo)

Social media platforms such as Reddit have enabled more direct communication channels and interactions between scientists and publics, for example through the use of question-and-answer sessions (Chen, Hara, and McKay 2021). At the same time, both human and non-human actants in the platform function as intermediaries

and mediators shaping these interactions, for example through manual or automated moderation techniques (Edwards and Ziegler 2022).

As the coronavirus pandemic developed, many actors in online discussion spaces were confronted with questions of how to deal with the 'infodemic' accompanying the global spread of the virus. On Reddit, several new discussion spaces (subreddits) on the topic of covid-19 emerged, one of which was made the official information channel for the entire platform. Rules for these new discussion spaces were negotiated, contested, and changed frequently as events unfolded both online and offline.

In this contribution, I follow the development of moderation and posting rules on several coronavirus-related subreddits. Deciding what kind of content would be allowed to be posted where and by whom, and negotiating what counted as 'scientific', 'reliable', or 'expert' sources of information, effectively shaped the way that knowledge about the pandemic was made visible on Reddit. By following the tensions and controversies arising from these decisions and becoming visible on the platform, I show the network of corporate decisions, community negotiations, and platform affordances mediating the opportunities for science communication on Reddit.

433 BETWEEN PUBLIC DELIBERATION AND CAPTURING OPINIONS: PRODUCING 'OPINIONS' IN A PUBLIC ENGAGEMENT ON GENE EDITING TECHNOLOGIES

Svenja Breuer (Technical University of Munich) Michael Penkler (University of Applied Sciences Fachhochschule Wiener Neustadt)

The past decades have seen increasing calls to actively involve publics in the governance of science and innovation. Many engagement initiatives aim at facilitating the formation of 'public opinion'. But what is 'public opinion'? While the notion is often taken as self-evident, different imaginations of what opinions are and how they should be formed are highly consequential for shaping relations between technoscience and society. It is this gap in the literature that we address in this article by analyzing how 'opinion' as an emergent object and category was imagined and produced in a series of German public engagement events called "Genome Editing in Dialogue" (GiD). GiD had as its primary goal to foster public "opinion forming" (Ger. "Meinungsbildung"). We investigate the discursive, material, and practical ways in which this goal was pursued in the initiative and trace how opinions are imagined and enacted to bear specific properties, political values and uses. We thus aim at advancing our understanding of how opinions and opinion forming, as central categories in public engagement, are enacted in participation projects. Tracing how opinion forming is framed, staged and enacted, we are contributing to a body of performative, relational and co-productivist analyses of participation and democratic practice treating them as objects of study and intervention in their own right.

This paper is based on an ethnographic case study of a series of public engagement events in the GiD project, which aimed to promote public dialog about emerging genome editing applications related to medicine and public health by organizing so-called 'Lower House Debates' (LHDs).Our grounded theory-informed analysis is based on field notes of in-situ observations, full transcripts of the discussions of three LHDs and qualitative interviews with 17 LHD participants, GiD reports, and additional textual material from GiD's websites.

601 MAKING AUSTRIA/SOCIETY TOGETHER AND AGAINST EACH OTHER – THE CO-PRODUCTIVE LOOP OF QUANTITATIVE SOCIAL SCIENCE AND PUBLIC ENGAGEMENT/DIALOGUE

Andreas Schadauer (University of Vienna, Institute of Sociology)

Most social science (e.g. sociology, economy, science studies) activities are strongly embedded in public dialogues. Social scientific knowledge can be found in columns of newspapers, television programs, or social media channels though mostly on current policy, economy, social affairs (see Angela Cassidy). Social scientists also regularly engage with different publics in events aimed beyond the scientific community - even outside of pandemics. (Some) Social Scientists also actively seek the public to give weight to and as part of their research. This together forms a distinguishable mesh of science and public engagement practices.

In my presentation I am going to address and disassemble one specific mesh based on a case study on a quantifying research project to highlight two co-productive features of social science and public engagement:

1) For the studied case, the transformation of conditional research into more broader claims was not reduced to the scientific community alone. The subtraction of modalities attached to specific arguments (Latour/Woolgar) took place in reports, events, and newspapers beyond the rules, understandings and teleoaffective structures (Ted Schatzki) of the social sites of research.

2) And at the sites of public engagement, not just the outcome of the research was up for discussion but science itself, or rather what good or real science should be in the first place (not unsimilar to discussions currently propelled by the covid-pandemic), preferring, and advertising a positivist “god-trick” (Haraway) notion of science.

Both instances strongly influenced in several ways the activities of the researchers, the researchers themselves, and the form and setup of follow-up research. Borrowing Latour’s metaphor, I therefore argue that this reciprocal engagement of science and publics is an important loop within the circulatory system of (quantitative) social scientific knowledge production and hence also of the production of the specific society enacted by these numbers, statistics, and arguments.

Room N102 - Panel 078. IN-BETWEEN METRICS AND GLOBAL ENVIRONMENTAL ASSESSMENTS: VALUING ENVIRONMENTAL SCIENTISTS AND VALUING ENVIRONMENTAL KNOWLEDGE

Thomas Franssen (Centre for Science and Technology Studies (CWTS)/Leiden University, The Netherlands)
Anne Beaulieu (Knowledge Infrastructures Department, Campus Fryslân, University of Groningen, The Netherlands)
Esther Turnhout (cience, Technology and Policy Studies, University of Twente, The Netherlands)

What is 'good' environmental knowledge? And what is a 'good' environmental scientist? These two questions are recurrently asked in assessments of environmental knowledge conducted by the IPCC or IPBESS, and assessments of environmental scientists by funding bodies, in yearly appraisals or national research evaluations like the UK REF. These assessments are fundamentally entangled. Beliefs about what it means to be a good environmental scientist shape what environmental knowledge is produced and how assessments of environmental knowledge are done (Lahsen and Turnhout 2021; Beaulieu 2022). And vice versa, assessments of environmental knowledge can also shape research priorities and change ideas about what good environmental knowledge is and what good environmental scientists do (Turnhout et al. 2014).

These assessments processes have much in common: they are both structured by performance metrics and indicators, they are mediated by knowledge infrastructures, and they are commonly criticized for the narrowness of the dominant valuation logic. They are also condemned for the way they undervalue or ignore indigenous and local knowledge, and for undervaluing research that is not published in high impact journals or aimed at societal stakeholders. Another recent trend that connects these is the assessment of universities and university departments based on their contribution to tackle environmental crises, specifically with reference to the Sustainable Development Goals.

At the same time, the assessment of environmental scientists and environmental knowledge are conducted for different purposes, and at times, draw on different value registers and valuation logics. Moreover, they are studied in different branches of STS, including those that focus on the epistemology of science, the science-policy interface and on research evaluation. The aim of this panel is to bring these into conversation.

This panel explores the similarities, differences and entanglements of assessments of environmental knowledge and assessments of environmental scientists, to learn more about 1) the metrics and indicators embedded in knowledge infrastructures 2) what they highlight and ignore, 3) how this affects epistemological and ontological (in)justice, and 4) how scientists, institutions and infrastructures navigate between divergent valuations.

We are in particular interested in the following topics:

The development and use of performance metrics and indicators is supported and mediated by knowledge infrastructures. Assessments of scientists often rely on scholarly databases such as the Web of Science and Scopus, which cover only a part of all scholarly output. Environmental assessments similarly draw on particular knowledge infrastructures, with their own limitations. How do knowledge infrastructures mediate assessments?
How are such emerging forms of assessment shaped and relate to established assessment processes? Which strategies of resistance, circumvention, corruption or extension of such assessment processes are employed in response to narrowing or broadening assessments of environmental knowledge and environmental scientists?
If we need better knowledge for sustainability, how can we rethink research and assessment infrastructures so that they support knowledge production for liveable futures? Which experiments or pilots already exist that go in this direction?
And finally, which possibilities are there for transforming assessments, to move towards more inclusive or grounded knowledge, and to decolonize environmental science?

Session 1

515 MOVEBANK: HOW KNOWLEDGE INFRASTRUCTURES SHAPE THE VALUES THE OF DATA, TECHNOLOGIES, ANIMALS AND RESEARCHERS

Thies Dinkelberg (Knowledge Infrastructures Dept, Campus Fryslân, University of Groningen) Anne Beaulieu (Knowledge Infrastructures Dept, Campus Fryslân, University of Groningen) Selen Eren (Knowledge Infrastructures Dept, Campus Fryslân, University of Groningen)

This paper examines the relationship between the design of knowledge infrastructures and the 'valuing' of different kinds of uses, based on Movebank as a case study.

Movebank is an online platform that plays a role in the management, sharing, analysis and archiving of animal movement data on a global scale. Movebank has been designed to archive, centralise, automate and support the documentation, standardization and discoverability of animal movement data. Much of this data is generated through the use of animal-carried censors. At the core of Movebank, we thus find data about the location of animals over time. This data can be very useful in different ways and is widely used to engage different publics on issues of conservation and biodiversity. It is also used by researchers and wildlife managers to study a variety of ecological problems and to develop management and conservation plans/policy.

Movebank therefore seems valuable for a wide range of uses. Value however, is the outcome of complex configurations and flows. Some users and uses are more highly valued by Movebank, and its design enhances certain kinds of values. To unravel these interactions, we therefore ask:
What can we learn from knowledge infrastructures such as Movebank, when we consider the ways they are designed and maintained in relation to the types of data they include/exclude, and the intended users and uses? How do evidence-based biodiversity and conservation policies intersect with the added value of Movebank?

By considering the range of functions provided by Movebank-automated data feeds, alignment with manufacturers, collection of information about tagging and animals, the provision of mobile apps, the publication of data and long-term archiving and the provision of APIs- we map out what is valued and how value is added to the Movebank data, and which users benefit from these investments.

631 IS MORE RESEARCH ALWAYS BETTER FOR ADDRESSING SOCIAL-ENVIRONMENTAL PROBLEMS? VALUING DIFFERENT KINDS OF KNOWLEDGE WORK IN SOIL CARBON RESEARCH

Ruth Falkenberg (University of Vienna) Lisa Sigl (University of Vienna) Maximilian Fochler (University of Vienna)

It is a common assumption that more knowledge is required to address current social-environmental crises. Yet, what does it mean to know more on a topic? Is this equivalent to producing more (specialized) papers? Are different kinds of knowledge work required at different stages of research on a topic? How to decide when enough is known to act and first and foremost translation is required? These questions seem highly relevant when it comes to addressing social-environmental problems, and they are intimately entangled with how researchers and their work are evaluated.
In our paper, we draw on interviews with soil-related researchers and we trace their reflections on the development of soil carbon research over time. Recently, soil carbon research has gained a lot of attention, due to the role of soil carbon stocks in both climate change mitigation and sustainable soil management. Especially in the past decade, publications on soil carbon have grown extensively. While this growth seems to have been primarily one of natural scientific publications, researchers now partly call into question this strong focus on generating more biophysical facts. Participants emphasised a need for integrated research that produces not only more natural scientific insights, but integrates these with economic and behavioural aspects. Moreover, researchers highlighted a need for more synthesis of existing knowledge, both for giving direction to new research and for putting the available knowledge to action. Yet, as participants also reflected, dominant ways of research evaluation often promote one-dimensional growth of research on particular bandwagons, while synthesis, integrated research, or even advocating action instead of further knowledge production are disincentivised. We also reflect on research and assessment frameworks that might be better suited to support such a plurality of kinds of knowledge work.

660 DEVICES FOR CULTIVATION: SUSTAINABILITY AS A QUALITY OF RESEARCH

Thomas Franssen (Leiden University)

Dominant modes of valuation in contemporary academia have been approached critically in science and technology studies. An important line of critique has targeted the valuation devices through which qualities of research are quantified and made commensurable for being overly reductionist. Devices such as university rankings and the H-index suffer from this problem as they reduce the many qualities of a university or individual researcher to a score that foregrounds a particular (enactment of a) quality. While this critique is important as valuation devices are often reductive, I argue in this paper that this need not be the case. Valuation devices can, under particular circumstances, allow for the cultivation of research qualities.

I report on an in-depth, action-oriented, study of the introduction of a self-assessment framework, called the Laboratory Efficiency Assessment Framework (LEAF), in four Dutch public research organisations that I was involved in as an evaluator. LEAF offers an online toolkit designed to guide researchers in improving the sustainability of research practices and laboratory spaces. Participating research groups can strive to achieve a bronze, silver or gold standard, which is established through an internal audit by an assigned coordinator. The results of the study show that while LEAF participation ends in a single score (bronze, silver, gold) using the toolkit broadens the understanding participating researchers have of sustainability as a quality of research practices and of their research environment. LEAF allows participating researchers to cultivate sustainability as a quality by raising issues and proposing interventions participants had not considered before. The paper reflects on the ways in which the LEAF-tool is used and reflects on the tension between cultivation and reduction present in the device. It sketches a research agenda for the empirical study of the cultivation of qualities and the valuation devices that assist in such endeavours.

648 ON VALUING THE REGIONAL IN OCEAN MODELLING

Jacqueline Ashkin (Centre for Science and Technology Studies (CWTS), Leiden University) Sarah de Rijcke (Centre for Science and Technology Studies (CWTS), Leiden University)

Studies of climate science show how understanding climate change relies on knowledge production practices and infrastructures that allow scientists to model the climate on a global scale (c.f. Edwards 2010). In contrast scientists studying the North Sea area, work with models that enact a regional or coastal scale. While global models have resolutions of hundreds by hundreds of kilometers, producing knowledge about the open ocean, models produced by our interlocutors range in resolution from a handful of kilometers all the way down to a few hundred meters, modelling ever closer to the coastline. While these smaller-scale models are useful for future coastal planning, they are not readily appreciated by dominant (e)valuation logics (see e.g. Lahsen & Turnhout 2021). We ask: how is climate knowledge on “regional” and lower scales produced under dominant valuation registers? What relations – both epistemic and social – make such knowledge production “doable” (Fujimura 1987)?

This paper seeks to answer these questions using a combination of interviews, document analysis, and digital ethnography. Drawing on existing work in science and (e)valuation studies (c.f. Rushforth et. al. 2018), we explore the epistemic choices modelers make within their models (e.g. what types of variables to in/exclude), and their relations with the organization of knowledge production (e.g. knowledge infrastructures, career opportunities, funding). We suggest that while trends in (e)valuation practices and climate change knowledge are oriented towards valuing the global scale, regional concerns are articulated through different valuation registers (c.f. Lee and Helgesson 2019) which make ocean models doable at regional and smaller scales.

467 NATURAL CAPITAL ENTANGLEMENTS

Kerry Waylen (James Hutton Institute) Simone Martino (James Hutton Institute) Kirsty Blackstock (James Hutton Institute) Alice Hague (James Hutton Institute)

We explore the multiple rationalities for knowledge generation, use and assessments entangling academics at the James Hutton Institute who are researching Natural Capital (NC) from early 2022. Put simply, three teams are required (i) to connect and analyse existing datasets to make NC more accessible, (ii) to improve valuation methods and data, (iii) to explore the potential of varied NC data and framings in policy-making and project planning processes.

The rationalities for knowledge generation that motivate the work are broadly similar: helping improve decision-making for sustainability. However, there are multiple and potentially inconsistent or incommensurate rationalities about what knowledge types and sources will be useful, at which scales, and for whom. Will phenomena that are already better understood, or those that are quantifiable, dominate what is visible and valued? Can or should be place-specific values, qualitative interpretive narratives, and large databases be ‘equal’?

We will handle this by frequent engagement across the teams, building interpersonal relationships whilst depersonalising differences in analytic perspective or methodologies. When engaging with policy and other stakeholders we will explicitly acknowledge multiple perspectives, and any tensions between different strands of research and their varied implications. There may be costs versus researchers that do not consider themselves or their subject as entangled; will unentangled researchers be quicker to publish ‘high-impact’ papers; might simpler recommendations be more attractive to stakeholders?

Thus we anticipate our work on NC will echo familiar challenges of transdisciplinary working, and tensions between how funders appraise research versus appraisals of academic careers; further exacerbated by recent

strains of remote lockdown working, and especially complicated by the varying assumptions embedded in the discourse on NC. We cannot hope to disentangle or remove all such tensions: however, we will navigate them through shared normative commitments to sustainability and pluralism, coupled with consideration for colleagues and stakeholders.

108 TRANSLATING AGROECOLOGICAL PRACTICES INTO PROVISIONERS OF ECOSYSTEM SERVICE: THE SEARCH FOR ENVIRONMENTAL INDICATORS IN ECONOMICS

Mertens Kewan (Centre de Sociologie de l'Innovation (CSI), Ecole des Mines de Paris) Van Ruymbeke Kato (KU Leuven) Vranken Liesbet (KU Leuven)

This article contributes to exposing the guts of academic research on Ecosystem Services (ES) and indicators. It thereby responds to the call for laboratory studies on the translation of ecosystem functions in commensurable objects. A participatory ethnographic study of researchers in a lab of environmental economics for more than two years reveals how studies on agro-ecological practices in Europe are reinterpreted in order to identify the delivery of ES. We document the difficulties encountered by environmental economists in the process, as well as their motivations and drivers.

While the concept of ES is not leading to a monetization of the environment, we find that dataification, standardization and translation are required to “measure” the ES provided by agro-ecological practices in Europe. This contributes to an economization of environmental qualities, since these qualities are decontextualized and deterritorialized. Specific ecological and spatial data are dropped in the process and replaced by new data which have little to do with the environment they are originally derived from. We argue that the newly formed data provide useful numbers for policy making that aims at a formal greening of European agriculture, but might have little relation with the environmental realities on the ground.
Interestingly, this transformation is not only imposed on the data and the environment these data are supposed to represent, but also on the researchers involved in the process themselves. We demonstrate how researchers had to cast away some of their learned concepts from environmental science in order to fit the mould of ES. Researchers are willingly adopting this mould because of ES’s promise of influence on policy making.

Our work contributes to research on economization. While the concept of economization has been taken up widely, little detailed research has actually been done to understand the difficult work of economizing our environment.

Room N118 - Panel 079. INNOVATION AND THE POLITICS OF TECHNOSCIENTIFIC FUTURES: PROBLEMS, ENGAGEMENTS AND POSSIBILITIES

Session 2

466 THE NEEDS OF INNOVATION - A REVIEW OF INNOVATION THEORIES

Harro van Lente (Maastricht University)

A key ingredient of socio-technical futures is the notion of 'need'. Typically, needs are the cornerstone and yardsticks of innovation, ranging from the needs of present societies (health care, aging) to the needs of future generations (sustainability). Future innovation, the argument goes, should cater for societal needs. The assumption, then, is that needs are pre-given, occupying a realm outside the activities of innovation, and that it is possible to know and measure them.

Yet, STS has challenged the standard notion that technology is developed to fulfil pre-given needs. Empirical studies indicate that when technologies are promised, developed and used, many things change in the same movement, including needs. Cars fostered the need of mobility. Showers fostered the need of being clean. In other words, needs are not the starting points of innovation, but their end point. This malleability of needs raises intriguing questions about how novelty and needs are co-produced and whether such changes can be anticipated.

In this paper I will review (i) how innovation theories conceptualize 'need'; (ii) the role of needs in the explanatory schemes of innovation theories; (iii) how in innovation theories needs bring along suggestions for improvements and inform socio-technical futures. I will contrast three groupings of innovation theories: evolutionary economics, socio-historical theories and transition theories. The analysis is based on a conceptual analysis of core texts and their scholarly use.

The review shows how needs in innovation theories may be articulated as 'preferences', 'demands', 'wants', 'desires' and 'rights'. Such articulations occupy different innovation discourses, and have different epistemological and moral significance. I also conclude that when needs are not pre-given, but dependent upon socio-technical configurations, and, in fact, both cause and effect of technological change, the question about desirable techno-scientific futures has to rephrased.

184 ENGINEERING TECHNO SCIENCE ABSENCES FOR INNOVATION

Colin Hill (Lancaster University)

As concerns have grown about sustainability and environmental impacts, scientists have been battling to find replacements for many plastic-based daily items that have become ubiquitous in many societies. One familiar item common in many industrialised countries is the single-use coffee cup, which often combines paperboard and a thin PE-lining which makes their disposal difficult. Most cups end up in landfill, incineration or littered into the environment.

In my recent research, I have explored the notion of 'exnovation' (Sattlegger, 2021) a concept for studying the withdrawal of unsustainable technologies. Science and technology studies (STS) and Actor-Network Theory (ANT) provide theoretical concepts to study the collection and negotiation of interrelations of people and technologies, but materials lock organisations into dependent pathways offering a resistance to change or innovation.

An exploration of a UK-based paper mill who process used PE-lined single-use coffee cups from major national and international chains is offered, showing how any innovation in the materials used in cups could upset the network and technologies created. Withdrawal away from unsustainable materials is not so much a question of successful translations of interests – including economic interests - but one of redefining relations to these technologies (Hawkins, 2020). Any changes made require actors to act, changing behaviours, expectations, or including new actors into the network whilst, at the same time, losing other actors.

By introducing new materials and innovations into single-use coffee cups demands a recognition that implementation requires a relational process of negotiating attachments to, and detachments from, key actors (Sattlegger, 2021).

The contribution of this paper is the focus on detachments from key actors (human or non-human) in a network where innovation is evident. A key finding is the resistance from key actors from changing the technologies and welcoming innovation when it challenges the sustainability of the established network.

872 FUTURE IMAGINATION, COMMUNITY AND SPACE

Amit Sheniak (Hebrew University of Jerusalem) Limor Samimian-Darash (Hebrew University of Jerusalem)

Technologies of imagination are means for contemporary societies to prepare for the future and govern its uncertainties. Future imagination in the form of technical innovation dominates neo-liberal social-political discourses and its complementary business and economic narratives (all linked) nowadays. It is often understood in relation to modernity and its prime social site, “the city.” Thus, the coupling of rural periphery and innovation may sound at odds.

Against this background, our paper seeks to unpack these imaginaries by highlighting the social and cultural contexts in which future imagination takes place to understand how cultural transformation is produced, experienced, and negotiated in non-urban settings. Drawing on ethnographic research in Israel’s northern and southern periphery, we analyze innovation centers located primarily in communal rural communities (kibbutzim). This enabled us to juxtapose the ultra-modernist and individualist ethos of the creative actor against a more communal understanding of social life. Alongside the imitation of “urban” innovation, we pinpoint the strong influence of the community and the contribution of local knowledge in the design of technologically innovative products and services.
We believe we implement the conference theme to present a "Critical examination of the dynamics by which knowledge and social orders are co-produced make visible the normative agendas and corresponding rationalities that are mobilized to govern in times of collective crisis". Our research raises various questions about the nature of future imagination technologies that are relevant to STS: why some social-technical imaginaries transcend across different temporal and cultural spaces, and other transform and change (Pfotenhauer and Jasanoff 2017); how perceptions of the future are socially and culturally constructed and shared nationally, internationally, and globally; and what techniques and practices of future imagination circulate among and between various institutional settings.

74 SOCIETAL ENGAGEMENT ON KEY ENABLING TECHNOLOGIES: INSIGHTS FROM EHEALTH, CIRCULAR ECONOMY AND INDUSTRIAL AUTOMATION

Raúl Tabarés (Tecnalia, Basque Research and Technology Alliance) Izaskun Jimenez (Tecnalia, Basque Research and Technology Alliance) Andrea Porcari (Associazione Italiana per la Ricerca Industriale) Nina Ritter (Danish Technological Institute) Willemine Willems (Vrije Universiteit Amsterdam)

Key Enabling Technologies (KETs) are usually defined as knowledge and capital-intensive technologies that are cross-cutting and have a significant relevance for diverse industrial and economic sectors. These technologies have a significant potential to induce profound and disruptive transformations into society whilst demanding a close collaboration between stakeholders for its development. Several initiatives have been initiated in the last years to promote awareness, societal engagement, adoption and diffusion of these technologies into society at EU and national levels.
In this contribution, we aim to shed some light on this topic through a case study that explore the dynamics and particularities of different KETs into three innovation ecosystems. These are eHealth (Denmark), circular economy (Italy) and industrial automation (Spain). This contribution adopts a qualitative approach consisting of an extensive document analysis and semi-structured interviews with stakeholders (n=35), exploring visions, meanings, imaginaries and understandings of societal engagement into these innovation contexts.
We argue that societal engagement is mainly seen by innovation stakeholders in these ecosystems as an instrumental process. Moreover, they often tend to perceive citizens as illegitimate or barely useful contributors to innovation processes. With the help of Responsible Innovation literature, we discuss the implications of these findings for future societal engagement processes. Some indications are posed to promote a more inclusive imagination of public and socio-technical engagements into industrial innovation.

Room N111 - Panel 090. THE MAKING AND UNMAKING OF TECHNOLOGICAL INFRASTRUCTURES: ROBOTS, CYBORGS AND MAPS

Session 1

311 EVERYTHING UNDER CONTROL? THE INTEGRATION OF URBAN INFRASTRUCTURE CONTROL CENTERS AND THEIR SOCIOTECHNIAL IMAGINARIES

Dr. David Joshua Schröder (Technische Universität Berlin)

In the face of globalized risks and crises, ranging from pandemics to natural disasters, cyberattacks, terrorism or riots, as well as an increasingly globalized economy that undermines local politics, social insecurity is becoming more and more of a theme. The rise of right-wing populist movements and a shift towards conspiracy myths are commonly cited as consequences of this insecurity. However, it is often forgotten that also technological innovation is considered as a way out.
Such a relation between technological progress and socio-technical imaginaries can currently be found in smart city initiatives all around the world, which seek to interlink a wide variety of infrastructures within a city. These attempts to interlink different infrastructures often arise in the context of sociocybernetic thinking, which intends to make social life modelable and controllable by means of technical control loops. In practice, this usually also leads to a physical integration urban control centers. This integration has surprisingly rarely been the subject of research. Yet such smart city initiatives are only the cutting edge of a extensive trend towards a consolidation of various control rooms.
However, with such efforts, cities are expected to regain control over the urban space by becoming more resilient to globalized risks and crises. In my contribution, I would like to show how the working profile of such integrated control centers and their socio-political role is changing. Likewise, I would like to highlight the ever-increasing spread of such integrated control rooms, not only as 'war rooms' during the pandemic, but also in different civilian spheres. Finally, in doing so, I also aim to shed light on the sociotechnical imaginaries that accompany their proliferation.
The results are based on an ethnography conducted from 2018-2021 as part of the collaborative research center 1265 on 'the re-figuration of spaces' at the Technische Universität Berlin.

155. WE MOVE. WE LIVE. – THE POSSIBLE FUSION BETWEEN THE HUMAN ‘I’ AND THE TECHNOLOGICAL ‘IT’

Marita Isaksson (Freelance with Degree of Master of Arts/Science Theory of Science and Degree of Master of Arts/Science Theoretical Philosophy University of Gothenburg)

Movement: a quest for life, a life philosophy, a necessity, a question of life or death…To move is a mundane part of human life just as much as an essential part of human survival. As we breath and when our heart beats – contraction, expansion and flow take place as our vital parts makes sure the correct balance, interconnected rhythm and stretching happens. All these micro movements taking place, often, without us noticing.

Body parts, smaller and larger, can be supported and replaced by artificial ones, and we can travel with technological aid instead of on the utterly slow two feet that most of us where fitted with. To be human in the 21st Century is to be a mix match of a biological body of flesh and blood and the artificial extensions of the human ‘I’ by the technological ‘It’, that makes it possible both for us both, the ‘I’ and the ‘It’, to live and survive. An interdependency where we all are obliged to move because standstill, sooner or later, leads to decay and dissolvement.

With my paper I argue that innovation and practice has moved beyond the point where a clear distinction between the human ‘I’ and the technological ‘It’ can be made. Just as the Earth is a prerequisite for human survival, at least for now, so has technology become an inevitable part of human life, I hold even to the extent that very few of us would survive without it. I therefore argue that the definition of the human ‘I’ need to be inclusive of the technological ‘It’ and that we, continuedly, need to keep being in motion by redefining the essence of human life. A task and question I find lay at the core of STS and therefore contributes to STS at its essence.

866 THE BUILDING OF AN INFRASTRUCTURE TO CONTRAST GANGMASTERING IN AN ITALIAN AGRICULTURAL LOCAL LABOR MARKET: ASSEMBLAGES, NEW TECHNOLOGIES AND TRANSPARENCY

Francesco Saverio Ranieri (Università degli studi di Roma, La Sapienza)

My purpose is to provide an empirical analysis of the role of technologies mobilized by the Lazio Region in order to contrast the phenomenon of gangmastering in the agricultural labour market of the Agro Pontino area, where this phenomenon is widespread, especially among the Indian Sikh community. Gangmaster system exists in various sectors, but is particularly widespread in the agricultural one, generating situations of illegality and exploitation (Omizzolo 2019).

With the theorical lens of the Policy Assemblage approach (Savage 2020), I will analyze the process that led to the implementation of a series of policy interventions, paying attention to the problematization, infrastructuration and regime phases of the policy (Ureta 2014). After showing the network of actors who should be mobilized, through an ethnographic approach I will discuss how the policy is translated into practice, paying attention to the introduction and role of technologies and specifically FairLabor, a digital platform which aims to ensure a legal intermediation between supply and demand for agricultural work. This platform, along with other measures, aims to build a legal infrastructure for labour intermediation in order to replace the illegal infrastructure that has stabilized over the years, but this is not to be taken for granted since, the way in which users interface with it and the processes of resistance and lack of connection between heterogeneous actors must be considered.

Technologies are important actors who are often mobilized in order to visualize and govern phenomena: information is the means by which modern government is made operational, as spaces, contents and dynamics of the state and its components become knowable and accessible (Henman 2010, Landri 2018). The issue of transparency is relevant since we will see how one of the main aspects of FairLabor is being able to bring some transparency into a particularly opaque labour market.

857 MAINTENANCE ROBOTS, POLICY INSTRUMENTS, AND THE COMMON GOOD: ASSESSING PRE-COMMERCIAL PROCUREMENT ASSEMBLAGES IN CONTEXT

Carlos Cuevas-Garcia (Technical University of Munich) Lukas Fuchs (Eindhoven University of Technology)

Contemporary societies live surrounded by decaying infrastructures. Accelerated by population growth, growing public service demand, and climate change, infrastructural decay has become the target of ambitious innovation policies. The European Commission but also national governments have mobilised numerous policy instruments to stimulate the co-creative development of infrastructure inspection and maintenance robots to bring together end-users, technology and business developers, and stakeholders from the whole supply chain.
In this paper, we examine two projects inspired in pre-commercial procurement aimed at developing sewer inspection robots, one supported by European Commission funding, the other by a public sector organisation alone. We articulate an assessment framework combining political philosophy and STS to examine these projects in context. In doing so, we depart from ethical assessments that focus on the technology or the policy instrument alone, ignoring that innovation exercises are constituted by assemblages composed by (1) a specific policy instrument, (2) a specific set of technologies, (3) a specific context of application, (4) which are situated in a particular but wider policy mix environment. We provide three lenses that help to assess these projects from different perspectives, each considering contrasting ethical problems, roles of the actors, and the stakes involved. As a result, we call for a shift from the evaluative focus on new technologies towards engagement with the institutions and practises that implement these technologies and form part of social and ethical life. We hope that our analytical framework can help address the question of how to make a fair and comprehensive assessment of particular policy instruments – the assemblages they form, and the futures they contribute to build. We situate our contribution at the intersection of work that considers the virtues (and vices) of innovation on the one hand, and those of maintenance on the other.

154 DIS/EMPOWERING CONSTRUCTION WORKFORCE: TECHNOSCIENTIFIC IMAGINATIONS OF EXOSKELETONS AND AUGMENTED REALITY GLASSES AS INTERFACES

Ann-Kathrin Wortmeier (Universität Stuttgart) Cordula Kropp (Universität Stuttgart)

Digital technologies such as exoskeletons or augmented reality (AR) glasses are currently in development for timber construction work, promising to simplify heavy physical work and cognitively complex tasks as a future "fusion" of humans, machines, and software. The promised assistance and relief effects are based on assumptions from engineering and information science, experiences from other application contexts, i.e., automotive industry, and/or on technology euphoria in advertisements. Their designers' assumptions are inscribed into technological design and use. Incorporating wearable digital technologies (in timber construction) may not only create new human entanglements with technology and materiality but also a realignment of social conditions such as agency, control, and responsibility. The novel entanglements imply political implications, specific structures of agency, and thus, in-/exclude certain "scripts of action" and communities.

We are interested in the technoscientific imaginations of the relation between construction workers and exoskeletons/AR glasses and how agency, control, skills, and responsibility are reconfigured and redistributed among multiple agents. Special emphasis is on the increasing “interobjectivity” coming with exoskeletons and AR glasses, which serve as intermediaries, and how they connect and redefine the interaction of humans with objects, machines, and information.

We explore how interfaces reconfigure power constellations between organizations, professionals, and technologies. Our analysis shows that assumptions about future conditions of use of AR glasses and exoskeletons play an important role, but in some cases are little more than stereotypes: In the case of workers wearing AR glasses, assumptions on necessary knowledge transfer vs hands-on experiences are significant. In the case of the human-exoskeleton fusion, assumptions about protective concern regarding the human body compete with the desire for rationalization, higher productivity, and performance.

Room N115 - Panel 096. CHANGING ECONOMIES OF ECOLOGICAL TRANSFORMATION

Session 1

201 ASSESSING THE ECONOMIC PERFORMANCE OF THE CIRCULAR ECONOMY: APPROACHES AND CASE STUDIES

Josep Pinyol Alberich (University of Exeter) Leandro Llorente Gonzalez (Erasmus University Rotterdam - International Institute of Social Studies) Wasim Malek (Högskolan Dalarna) Mohammad Javad Ramezankhani (University of Kent)

The production of knowledge is a strategic element that shapes how society conceptualizes the world, and how society enacts it in policy and management (Turnhout, 2018). With the emergence of the circular economy, many scholars have also called to reconsider how the performance of the economy is conceptualized (Hanaček, Roy, Avila, & Kallis, 2020; Hickel & Kallis, 2020). This debate has also implications for the definition of economic indicators, as there is a need for new economic indicators that capture more holistic and sustainable views of the economy (Stiglitz et al., 2020). However, GDP remains as the basic indicator for economic performance. There is a societal need to reconceptualize the economy and its performance to change towards a more liveable and sustainable future (Bimpizas-Pinis et al., 2021; McElwee et al., 2020).

In this paper, we want to explore the similarities, differences and entanglements of how different indicators measure economic performance to learn more about what they highlight and what they ignore. In seeking to move beyond the traditional conceptions of economic performance, we classified a range of indicators according to three dimensions: resource efficiency, environmental sustainability, and well-being.
We selected 10 different examples that have been developed by governments and high-profile international organisations and where, as a result, there is a relevant track-record to examine. These are: National Circularity Gap, OECD Green Growth Indicators, Sustainable development indicators, Environmental Performance Index, Gross National Happiness Index, Canadian Index of Wellbeing, Genuine Progress Indicator, European Social Progress Index, and Size of the Informal Economy as a percentage of GDP. After reviewing and comparing these indicators, we observe that the alternative indicators to measure economic performance have the ability to provide a better picture according to the new understanding of the economy implicit in the circular economy.

414 GEOGRAPHIES OF CIRCULAR ECONOMY: TOWARDS A JUST TRANSITION BASED ON HUMILITY

Maddalena Ripa (Autonomous University of Barcelona, UAB) Tess Doezema (Autonomous University of Barcelona, UAB) Mario Pansera (University of Vigo)

Circular Economy (CE), a pillar of the European Green Deal, promises to close the circle of economy-society-nature interactions, replacing the current linear economic model with a new one that is restorative and regenerative by intention and design, i.e., capable of turning waste into valuable resources. Like many frameworks for addressing environmental crisis that have recently gained political currency, the concept of circular economy relies narrowly on increasing the creation of new technologies, with an eye to stimulating the economy, and a corollary lack of a reflection on the political and socio-cultural dimensions and (global) consequences that such an imagined transition to circularity would entail. This narrowness is both familiar (unsurprising) and inappropriate to the scope of ambition for CE and to contemporary science-society frameworks embraced elsewhere in EC and other policy discourses. “The issue” Sheila Jasanoff argues, “is no longer whether the public should have a say in technical decisions, but how to promote more meaningful interaction among policy-makers, scientific experts, corporate producers, and the public.” Tackling these challenges demands an elaboration of STS theory, and the articulation of explicitly situated and reflexive conceptual frameworks to inform the analysis and creation of CE practices. We take Jasanoff’s concept of “technologies of humility” as our starting point, drawing on empirical and conceptual elements from a variety of fields (such as Feminist Ecological Economics, Political Ecology, Environmental Justice, Decolonial studies) to provide an epistemological, theoretical and methodological scaffolding for the normative questions we should be asking about the future of CE. We will mobilize this framework to guide the analysis of different CE practices in Global South and North, seeking to understand, in critical and thoughtful way, under which conditions a responsible, inclusive and socially just transition to a CE is possible and desirable.

46 POST-AUTOMATION: OPENING-UP AUTOMATED FUTURES?

Adrian Smith (Science Policy Research Unit, University of Sussex) Mariano Fressoli (Fundacion Cenit, Universidad Nacional de San Martín)

There is nothing automatic about automation. And yet most public discourse, policy analysis and academic research takes automation to be an inevitable object in technoscientific futures. Advocates for the Fourth Industrial revolution, for example, claim automation will renew capital accumulation, boost labour productivity, and extend managerial control in more sustainable systems of production and consumption. Accelerationists on the Left, meanwhile, see in automation socially revolutionary possibilities for a world of fully-automated luxury communism. Either way, it appears the future is reduced to automation and hopes (and anxieties) about its promise.

Whilst our paper presentation begins with criticism of this 'future essentialism' (and evidence that universal automation may not be as full in control as anticipated), most of our analysis turns instead to alternative practices in marginal industrious spaces within industrial societies. Here people are hacking, subverting and appropriating ostensibly automating technologies for purposes of creativity, collaboration, and care. We use examples in commons-based peer-production, citizen sensing environments, right to repair movements and digital durability, decolonising technology, platform cooperatives and technopolitics, to illustrate how these industrious spaces cultivate social capabilities for post-automation. In these examples, people appropriate and interpret technologies in light of the hopes and aspirations of those they collaborate with, in the everyday situations they find themselves in, and the places which they wish to improve. Post-automation has a more virtuous orientation towards open, less essentialised futures.

However, the non-programmatic character of post-automation is troubled in a world where innovation institutions, social movements and political economies align and mobilise around, in and against future objects like the fourth industrial revolution. We therefore close by considering how attention to the politics of post-automation simultaneously helps and fails to open our futures to more democratic deliberation.

261 CLIMATE JUSTICE INFRASTRUCTURES: THE CARBON BUDGET AND CLIMATE CHANGE LITIGATION AS SOVEREIGNTY TEST

Huub Dijstelbloem (University of Amsterdam)

Whereas the discourse on climate justice develops and concepts increasingly find their way to international agreements and national climate policies, less attention has been paid to what can be called climate justice infrastructures, namely the tools and technologies that are required to measure, calculate, monitor, distribute, justify and legitimate climate policies that are supported by climate justice arguments. This paper investigates two examples of climate justice infrastructures: the carbon budget and climate change litigation. The paper elaborates on the concept of symmetry and the demarcation struggles between politics, science, technology and nature in terms of an experimental setting. As Mitchell has shown in Carbon Democracy, a symmetrical perspective is a promising method to analyze the relationship between infrastructures, socio-technical organization and political systems. The paper argues the global carbon budget and climate litigation be considered as climate justice infrastructures and sovereignty tests. The first example, the carbon budget, explicitly aims at mediating between scientific knowledge and policymaking and can be considered as a contemporary infrastructure, an experimental setting to test state sovereignty in climate change policies. With regard to the second example of climate justice infrastructures, climate change litigation concerns any piece of federal, state, tribal, or local administrative or judicial litigation in which the tribunal decisions directly and expressly raise an issue of fact or law regarding the substance or policy of climate change causes and impacts. The paper concludes climate justice infrastructures question states' space for political action by limiting the amount of carbon emissions by a carbon budget and forcing states to comply to this budget via climate litigation. As such, new forms of calculation, technological assemblages and databases related to carbon budgets and carbon emissions can be regarded as a test set-up, to conduct experiments with the concept of sovereignty itself, to test its presence.

549 GOVERNING AS IF WE KNEW HOW. REHEARSING PREFIGURATIVE CITY POLITICS IN CLIMATE CRISES

Tapio Reinekoski (Tampere University)

To curtail the disastrous effects of climate change, we must urgently align desired future ends with the means of achieving them. Despite abundant knowledge of both, a vacuity between enforced measures and their targets persists in climate governance as is. I present a case study of a research effort to engage policymakers in changing tack: a decision-making exercise with politicians and experts of the city of Helsinki.
The premise of the exercise was to let policymakers 'live through their decisions' in a setting that would suspend established practices of policymaking. Prompted by a scenario of the city's immediate future, the participants were presented with policy options and tasked to deliberate which one to choose as a pathway out of the

impending crisis. Depending on the choice, a new scenario would describe the consequent future in ten years' time and introduce further decision options. Ultimately, a depiction of a 2040, more worrisome than the starting point, would close the narrative.

I will read the exercise as an experiment with a kind of governing that acts as if it knew the future conditions that present actions invoke. In other words, it rehearses the prefigurative possibilities of institutionalised politics: the ability to enact alternative realities as if they were already at hand, to act on futures in the present so that the ends fold into the means. While such 'prefigurative politics' commonly refers to radical social movements upending hegemonic powers, I explore the suggestion in recent political studies that also institutionalised governance could know how to enact preferred futures in the here and now.

Eventually, the policymakers took recourse to economic prudency, deferred ethical considerations, and found solace in political professionalism. The outcome begs the question whether the exercise reinforced the very governance practices it set out to expose to self-scrutiny and realignment.

Room N117 - Closed Panel 019. NEW GOVERNANCE APPROACHES FOR CRITICAL DUAL-USE TECHNOLOGIES

Georgios Kolliarakis (German Council on Foreign Relations)

Emerging and converging technologies, such as bio-, nano-, and quantum technologies, micro-electronics and semi-conductors, position, navigation and timing technologies, but also additive manufacturing and artificial-intelligence driven applications belong to “critical”, “foundational” or “key enabling” technologies. Such technologies have both civil and military applications, and they bear the risk of accidental or intentional transfer and usage for malicious purposes, such as building components for weapons of mass destruction, hybrid warfare, and terrorist attacks. However, since they sustain vital functions for a state’s critical infrastructure, capacity to safeguard welfare and security for its citizens, but also its R&D and industrial competitiveness, they cannot be easily subjected to outright bans.

A number of multilateral regimes for strategic export controls against illicit diffusion (Wassenaar Arrangement, Nuclear Suppliers Group, Australian Group), as well as treaties (UN Convention on Certain Conventional Weapons, Biological and Toxin Weapons Convention) are already in place. However, the shifting character of proliferation, and the lag in updating lists of risky technologies prevents monitoring and enforcing compliance from keeping pace with reality. The recently adopted EU Dual-Use Regulation (EC 2021/821) acknowledges the lowered thresholds for transfer and misuse of intangible technologies, such as AI algorithms deployed in pattern recognition and surveillance applications, and additionally introduces safeguards against terrorist and human rights abuse. Yet, authorities still need to develop the capabilities for reliably identifying which technologies, which developers, retailers and end-users, and which usages should be controlled.

This panel addresses the issue of adjusting emerging and readily available technologies governance as a wicked problem, in the face of both technological and non-technological, geopolitical developments of rising power competition and global techno-nationalist races. The papers cover a range from R&D, industrial, and trade policies, to anticipatory technology governance and risk assessment methodologies, RRI- and human-rights-oriented normative requirements, as well as the technopolitical imaginaries behind current international security policies, and offer multi-disciplinary perspectives upon STS (international law, technology assessment, security & strategic studies). The discussion will address questions at political, institutional, and methodological level:

- Are the existing regulations fit-for-purpose to address the proliferation of risky applications from new and established technologies in a timely way, without backfiring, e.g. by disrupting global supply chains of critical items?
- How can technology (risk) assessment methodologies establish “early-warning” mechanisms for detecting probability and severity of “function creep” and misuse, and prevent geo-economic or particularistic interests from unnecessarily securitising R&D activities?
- What mix of “soft” and “hard” governance instruments, ranging from codes of conduct, R&D oversight, standardisation, and regulatory sanctions need to be in place at each stage, from research, toward industrial production, commercialization and export?
- Which STI policies should follow a ”whole-of-government” approach at pan-European level, in order to reconcile policy goals, foster international alliances, and promote beneficial usages from technology?

The proposed panel thematically fits into following conference streams of STS scholarship: Governance & Public Policy; Ethics & RRI; Imaginaries & Technoscientific Narratives; Value/Valuation, Markets & Innovation.

Session 1

591 INNOVATION AND INTERNATIONAL SECURITY IN TENSION: CHALLENGES IN APPLYING TECHNOLOGY TRANSFER RISK MANAGEMENT MEASURES IN RESEARCH ORGANISATIONS

Ross Peel (Department of War Studies, King’s College London) Hassan Elbahtimi (Department of War Studies, King’s College London)

Whilst the pace of technological development is accelerating in both the private and public sectors, universities and research institutes (hereafter collectively “research organisations”) nevertheless retain leadership in the development of emerging technologies. Research organisations have a culture of innovation and international knowledge sharing which has long existed in tension with government policies aiming to prevent the transfer of sensitive knowledge to hostile states and non-state actors. However, many governments now increasingly require research organisations to take action to prevent such sensitive technology transfer, due to increasing great power competition for technological dominance coupled with fears over proliferation of weapons of mass destruction (WMD). In this paper, reasons for this cultural clash and why it is now coming to the fore are explored, and the potential impacts for research organisations and innovation are discussed, using a range of illustrative case

studies of past sensitive technology transfers. Using the UK higher education sector as a model, recommendations are then presented on how government and research organisations can work collaboratively to achieve a balance between international security priorities and innovation.

If research organisations are required to implement restrictions on their activities, international scientific cooperation will likely be slowed and/or reduced. Whilst it is likely that only a small fraction of research activities would be affected under such scenarios, any impacts will be felt more broadly, as research organisations would highly likely need to implement new risk assessment and compliance processes, creating additional costs. This also risks hindering the ability of organisations to compete equitably in the international marketplace of ideas, or even earn sufficient research income to support their beneficial activities. Restrictions on the types of research permitted, the ability to attract top-tier international talent, and the ability to accept funding from foreign sources must be balanced and proportionate to the risk.

592 SURVEILLANCE TECHNOLOGIES AND TRADE: MULTILATERAL APPROACHES TO HUMAN RIGHTS RISK ASSESSMENT

Machiko Kanetake (School of Law, Utrecht University)

Surveillance technologies have been traded globally, bringing both benefits and risks. Take, for instance, the transfer of facial recognition systems to another country. On the one hand, the transfer, which generates technological and economic gains in an exporting country, may assist law enforcement in an importing country to conduct criminal investigations. On the other hand, however, the transferred biometric systems can also be used to monitor and suppress journalists, dissidents, and the wider public, bringing enormous human rights risks to the destination country. Despite the multi-faceted risks and competing interests, there is little transparency and accountability in global surveillance trade. A vast amount of scholarship exists on the adverse impact of the use of digital surveillance technologies on human rights and democracy. Only limited attention, however, has been paid to the role of the global sale and transfer of surveillance technologies in facilitating the misuse of the technologies.

Against this background, my paper will address the concept of, and methodologies for, human rights risk assessment in connection to the transfer of digital surveillance technologies. On this technological front, the EU has already taken an autonomous approach in this regard. Under Article 5(2) of the EU's Dual-Use Export Control Regulation which entered into force in September 2021, exporters are supposed to conduct human rights due diligence in connection to the transfer of cyber surveillance items. Uncertainties remain, however, not only the interpretation of the EU's Regulation, but also the way in which the EU could engage with multilateral export control regimes on this contested issue. Comparison will thus be made between the EU and US approaches to human rights risk assessment. More fundamentally, consideration will be given international human rights norms as a basis for deciding whether to permit the transfer of digital surveillance technologies.

593 SOFT GUIDELINES FOR HARD PROBLEMS: THE IMPORTANCE OF SOFT LAW IN STRATEGIC TRADE CONTROLS

Ana Sánchez Cobaleda (Public International Law & International Relations Department, University of Barcelona)

Controlling the transfers of any material that could, according to a state's authorities, harm its welfare, development, peace, or security, has been a constant throughout history, and using trade restrictions continues to be a way of punishing or weakening the adversary. As demonstrated by international treaties and UN Security Council resolutions, trade controls of so-called dual-use items are a preventive measure to authorise or prohibit exports of goods that, while having civilian applications, may also end up becoming weapons or contributing to their production and dispersal, although conventional hard-law instruments do not always precisely define the materials that should be subject to control. In an attempt to fill that void, multilateral export control regimes –i.e. voluntary fora where supplier states of nuclear, chemical, and biological dual-use technologies agree on export conditions that are embodied in soft-law guidelines and specific controls lists-, have become essential for the current non-proliferation architecture, albeit not without criticism.

Trade control is not the only field in which the rise of soft governance is taking place, however, it represents an ideal area of study, insofar as the characteristics of soft-law and its contribution to risk assessment processes have an obvious impact on the functioning of the non-proliferation regime. Given the relevance of the politically binding guidelines of the Nuclear Suppliers Group, the Australia Group, the Missile Technology Control Regime and the Wassenaar Arrangement, and of their interaction with conventional law -which is particularly notable in the European Union context-, this contribution analyses the common features of these soft governance regimes (informality, restricted participation, constraining decision-making rules, membership affinity, voluntary nature and similar risk assessment procedures), while identifying their main shortcomings, and proposing possible courses

of action for the current strategic trade control system to better address proliferation risks in a timely and more efficient manner.

595 A WHOLE-OF-VALUE-CHAIN CRITICALITY ASSESSMENT APPROACH FOR DUAL-USE TECHNOLOGIES

Georgios Kolliarakis (German Council on Foreign Relations)

In the course of the past decades, development and diffusion processes of technologies with dual-use and misuse potential have been transformed: First, the reversal of the innovation transfer direction, from the civil-to-military domain. Second, the expansion in the number of emerging, and readily-available technologies, such as bio-, nano-, and quantum technologies, micro-electronics and semi-conductors, PNT technologies, additive manufacturing and AI, that may converge and find risky novel applications. Third, the digitalization of operative functions than can be transmitted electronically, stored in clouds, etc.. Fourth, a major shift in the global geopolitical environment that has given rise to a new technological race among major high-tech states.

While existing export control regimes have the primary mandate to prevent the diversion of key technologies to actors that could build WMDs, the recent expansion of control objectives to public security, counterterrorism, and prevention of human rights violations (e.g. via cyber-surveillance) require an update that takes account of all the above factors. Point of entry for this paper is the changing meaning of proliferation, the considerable rise in affected actors, including academia and SMEs, and the increase in intangible channels of technology transfer,

This paper will sketch out key parameters for an anticipatory governance approach to technology with dual-use and misuse potential and reflect upon the goal ambiguity of several concomitant policies, as well as the geo-economic rivalries, that may enable or constrain its effectiveness.

First, an “early-warning ” criticality assessment, encompassing ease of misuse, accessibility threshold, magnitude of harm, imminence of misuse, but also degree of governability with regard to illicit transfer.
Second, a “whole-of-value-chain” engagement of stakeholders, for better connecting research, development, and application contexts that involve different actor constellations.

Third, a rich-context, use-case-oriented anticipatory methodology, following practices already applied for AI standardization, that point to different appropriate upstream/downstream, soft/hard, uni-/multilateral, technology-specific/cross-cutting interventions.

Saturday, 9th July

10:00-11:30

Room N118 - Panel 012. DOING AIRBORNE EXPOSURE: STORIES, DEVICES, KNOWLEDGES AND PRACTICES

Session 2

54 NEGOTIATING THREATS: HISTORICIZING THE ELEMENTAL WORKING OF MEDICAL MASKS

Hung-Ying Chen (International College of Innovation, National ChengChi University) Marijn Nieuwenhuis (Department of Geography)

Medical masks, a personal protective equipment that negotiates across bodies, breaths, airs and lived experiences, have gained unprecedented traction during the COVID-19 outbreak. Existing at the intersection of health, politics and affect, they evoke lines and flights of contentions and resistance in people's daily lives. Social anxiety, frustration and anger, especially in the Western continents, have moved far beyond immediate questions of efficacy and resource management. These thin sheets of polypropylene and cotton constitute not only an elemental border against respiratory threats, but articulate and give expression to racial, class, environmental, political and cultural divisions.

In this article, we foreground medical masks through a historical lens and trace their evolving politics from the moment of their first known emergence to the present day. We explore their evolution from the thanatopolitics of medieval Beak masks, to Wu Liande's invention of making gauze masks in the early twentieth century and the contemporary industrial production of surgical masks and N95 respirators. These examples, we show, constitute and represent different forms of elemental thinking about masks, both in their materiality and design, which mirror historical and biopolitical changes. We exhibit that medical masks are not simply a filtering device in crowded environments against elemental exposure from respiratory viruses, but that they are biopolitical techniques through which are enacted different regimes of inclusion and exclusion.

708 OPEN WINDOWS, AIR CHANGE RATES AND SNEEZE GUARDS – THE DIFFERENT ENACTMENTS OF RISKSCAPES IN THE MANAGEMENT OF PERSONS EXPOSED TO SARS-COV-2

Hall Kevin (Philipps Universität Marburg)

This paper is inspired by an encounter that occurred during my ethnographic fieldwork as a contact tracer in a German public health office during the second and third COVID-19-wave. A person was putatively exposed to invisible SARS-CoV-2 aerosols. As a contact tracer I was charged to assess the man's likelihood to have contracted the virus using criteria defined by the Robert Koch-Institute, Germany's federal disease control and prevention authority. The man fulfilled the criteria for likely exposure. The case seemed simple until he mentioned that the room where the exposure had occurred was part of a laboratory building with a high-performance ventilation system. This complicated the decision as the criteria had to be translated to the technical specifications of the ventilation system.

This complication serves as a point of departure to think about the work done by contact tracers and the various enactments of invisible viral aerosol clouds in the criteria for likely exposure. I employ the concept of riskscapes (Müller-Mahn, Everts & Stephan 2018) to think about how the criteria constitute different landscapes of risk by relating risk, space and practice to each other. To this end I will firstly conceptualize contact tracing as a practice of translating narratives into cognitive maps. In a second step I unpack the different criteria employed by contact tracers to imagine the invisible viral aerosol cloud. The material semiotic relations performed by the experiments informing these criteria liken the viral clouds to toxic gases. These experimentally enacted relations of airborne exposure in turn informed spatial arrangements, movements and practices of personal protection and sensing in office spaces, classrooms and even the office of the contact tracers themselves.

719 URBAN HEAT EXPOSURE: KNOWLEDGES AND PRACTICES OF OLDER ADULTS

Zofia Bieńkowska (University of Warsaw) Franciszek Chwałczyk (Adam Mickiewicz University) Paloma Yáñez Serrano (Adam Mickiewicz University)

With this paper we would like to explore the role of airborne exposure in the context of increasing urban heat, and demonstrate that experiencing heat is to a large extent mediated through air. Urban heat is both a physical and social phenomenon with real physical and social consequences. As our research shows, heat is embodied through heavy breathing and sticky air that makes it difficult to move. Air is also used as a means of adaptation, as heat relief might be achieved through breeze from the open windows or using a fan.

The main objective of this paper is to explore how exposure to heat happens through air, and how people use air as a means of adaptation. The study is part of the European research project Embodying Climate Change: Transdisciplinary Research on Urban Overheating (EmCliC). We build our argument on ethnographic research in Warsaw and Madrid (19 participants over 65 years old) and focus groups in Warsaw (81 participants over 65 years old) conducted in the summer of 2021. We combine incidental and discussed narratives from focus groups with detailed, longitudinal participant observations from ethnographies.

Our research shows that being aware and adapting to heat exposure depends on contextual age-body-knowledge-attitude-practice assemblages. We explore how older urban citizens have learned to negotiate this intricate nexus from previous generations and through their own life experiences. This includes the analysis of how the group we studied actively engages with air – by creating or searching for air currents and inventing ways to deal with the heavy, hot air that burns their bodies. The heterogeneity of knowledge and practices leads to curious contradictions and allows ambiguous adaptive strategies to emerge. We will discuss how some of these strategies provide mental relief but at the same time enhance physical exposure, or vice versa.

Room N101 - Panel 014. INTERSPECIES AGENCIES: CONTROVERSIES, ONTOLOGIES AND NEW FORMS OF COHABITATION

Session 2

652 CHALLENGING THE ONTOLOGICAL ASSUMPTIONS ABOUT NON-HUMAN ANIMALS IN ENVIRONMENTAL IMPACT ASSESSMENTS: A REFLECTION ON ABSENCES AND PRESENCES IN THE CONTEXT OF A SOCIO-ENVIRONMENTAL CONFLICT.

Francesc Rodríguez (Brandenburg University of Technology)

Based on a multi-sited and multispecies ethnography carried out between 2014 and 2016 in southwest Costa Rica, in this panel presentation, I will explore a series of absences and presences of nonhuman animals in the context of a socio-environmental conflict over run-of-the-river dam projects. In particular, this panel presentation will address the absences of endangered species in Environmental Impact Assessment (EIA) reports of the aforementioned dam projects; followed by an account of the presences and roles of such species in co-creating (more-than-human) communities that challenge the ontological assumptions about non-human animals underlying the EIAs. The implications of this paper can be useful for highlighting both the significance of non-human animals in socio-environmental conflicts and the importance of multispecies encounters in the daily life of the Costa Ricans who are engaged in struggles for life in common and against hydro-extractivism.

885 SOCIAL DRIFT: THE CONSERVATION OF THE COONTOGENIC NICHE IN THE RELATIONAL SPACE OF LANGUAGE

Beto Vianna (Universidade Federal de Sergipe)

Natural drift is the explanatory path proposed by Chilean biologists Humberto Maturana and Jorge Mpodozis for the evolutionary phenomenon, in which behaviour, that is, the dynamics of organism-environment encounters, and not some external factor, or master molecule, guides the history of change and conservation in a lineage. In the same way, coontogenic processes at various levels, from the most conservative, such as symbiosis, to the formation of intra and multispecies social systems, depend, at every moment, on the conservation of a relational space through the behaviour of the organisms involved, a phenomenon I call social drift. While acknowledging the arguments of human exceptionalism in language, I propose, from the observation of multispecies social systems, that such systems are realized as a coontogenic niche in a linguistic domain, which lasts as long as each organism (human or not) consensually coordinates its actions with other organism or organisms, changing or conserving its dispositions of action (its emotions) in a way that is coherent with its history of interactions.

574 (RE)CLAIMING THE ANIMAL THROUGH A POSTCOLONIAL POSTHUMANIST FRAMEWORK

Jaya Sarkar (Birla Institute of Technology and Science- Pilani, Hyderabad, India)

The proposed paper will demonstrate the shift in the understanding of the extended, nuanced, posthumanist concept of interspecies agency in the Global South to deconstruct the concepts of speciesism and ableism using a postcolonial posthumanist framework. Western colonizers have been successful in not only colonizing humans but also animals by establishing binary separations and asserting the primacy of their culture and views. With emerging discourses on interspecies agencies, it becomes necessary to create a transformative space where social constructions and entanglements with humans and non-humans are re-constructed. Postcolonial posthumanism creates this space by focusing on nomadic transversal alliances to reconstruct a world belonging to both humans and animals. Posthumanism requires the awareness of postcolonial theories to recognize the multiplicity of beings and technological entities by fostering non-dualistic thinking. The notion of postcolonial posthumanism, therefore, emerges as an important framework in the traditions of nations that have a long colonial history, especially the Global South. This paper will use Donna Haraway's concept of the 'companion species' to refer to the co-dependencies between different species through mutual connections. The animal is no longer seen as the Other in the posthuman context and is part of an environment that is non-hierarchical. The paper will establish this along the lines of Stacy Alaimo's concept of animals as individuals with personalities who block their appropriation into victimization discourses. This elevation of animals to the status of 'individuals' frees them from their status as Other and denies the humans their species supremacy. So far, there has been a gap in the fields of both STS and posthumanist studies, with the absence of postcolonialism. This proposed paper aims to address that gap to explore the boundary collapse between the human-animal and the rejection of the centrality of the anthropocene in the postcolonial context. The animal's capabilities have long depended on humans, but postcolonial posthumanism accounts for the animal's situated perspectives by displacing anthropocentrism and recognising trans-species solidarity.
Keywords: Animality, Binaries, Postcolonial posthumanism, Interspecies agencies, Trans-species solidarity.

Samit Basu's Turbulence (2014) explores the superhuman abilities acquired by four hundred and three passengers travelling on a British Airways flight from London to Delhi. These passengers fall asleep in the flight and wake up to find themselves possessing abilities somewhat related to what they have been dreaming about in the flight. Among those passengers were two persons, Sher and Mukesh, who acquired the abilities to transform themselves into animals. Their transformations critique the rigid boundaries between human/non-human, man/animal, and human/posthuman. In "Animals, Anomalies, and Inorganic Others," Rosi Braidotti argues that posthuman bodily materialism considers the animal "in its radical immanence" as a body that is full of possibilities (Braidotti 2009, 528). The animal's capabilities have long depended on humans, but Basu's novel accounts for the animal's situated perspectives. Sher and Mukesh's sustainable transformations into animals displace anthropocentrism and recognise trans-species solidarity. Their interchangeable bodies adhere to Braidotti's vision of open-ended, trans-species bodies. The boundaries of the animal/man/technology become blurred to support a politics of solidarity with an oppressed nature. Blurring every possible binary of past/present, human/non-human, organic/inorganic and biological/technological, Basu's novel exposes the limitations of these binaries and gives them a new dimension by uncovering the internal realities of human-animal experiences. The paper aims at integrating human-animal relations in its theoretical framework to highlight how understanding and rethinking human-animal relations will eventually lead to a more comprehensive understanding of many human intergroup phenomena. This paper further demonstrates how postcolonial posthumanism focuses on nomadic transversal alliances to reconstruct a world belonging to human and non-human others. Through an analysis of Basu's novel, the paper argues that his work reconceives the relations between humans and animals through embodied and skilful engagement with the larger-than-human world.

Bill Ashcroft argues that in a postcolonial narrative, "the boundary between self and other blurs, a space in which meaning is negotiated, wherein a sense, both writer and reader are changed in constitutive collusion" (411). Turbulence is a narrative that is firmly rooted in postcolonial posthumanism, in which speciesism and ableism are negotiated by assigning a voice to non-human animals. Posthumanism prioritises 'things-in-phenomena' and "sense-making becomes a dynamic, ongoing, continual, and reiterative unfolding of discursive and material forces intraacting together" (Riley 91). The Indian passengers, with their superhuman abilities, resist the supremacy of the western white man and give voice to the Other, both human and non-human. Turbulence begins with the description of the superhuman abilities acquired by Flight Lieutenant Vir Singh that allows him to fly around the clouds. Vir was one of the four hundred and three passengers who were travelling on the flight from London to Delhi, who mysteriously fell asleep and woke up to find himself possessing superhuman abilities. However, the speciesism tendencies ingrained in humans pit them against other humans who tend to have more than human abilities. Hence, once people became aware of what had happened in the flight, they started to track and hunt down those with enhanced abilities: "All the other British people, all the passengers from other countries — all gone. They've been taken away. There's not been any outcry in the press abroad, so there must have been some kind of cover story" (Basu 54). Aman, one of the affected passengers, tries to bring together others who had been similarly affected, in order to protect them from the government or the military, whoever is responsible for capturing the others. Aman's powers let him "hook up to anything on a network- computers, phones, satellites, all sorts of stuff" (Basu 50). After he gets a few of the affected passengers under the same roof, they eventually figure out that people in the flight got their abilities according to what they have been dreaming during their journey. Among these passengers are Sher and Mukesh, who possess powers that enable them to transform themselves into animals at their own will. Every time the transformation that Sher goes through is spectacular, "his muscles swell up, and dark lines appear around his body, swirling contours that converge into thick black stripes. His spine bends forward; his face contorts, fur sprouts out all over his body. His clothes rip as his torso thickens" (Basu 98). He emerges as an eight-foot giant with a tiger's head and paws. Once transformed, he growls, a low, ominous rumble that completes his resemblance with a tiger. Even if Sher can transform himself at his own will and can fight with the ferocious intensity of a tiger, he remains human in his personality, ignorance, and idiosyncrasies. From his joining Jai's team because of the higher possibility of survival with the strongest to his annoyance at computer and World of Warcraft, and his care and concern towards the little Anima suggest that his inner self does not comply with his becoming animal. Squadron Leader Jai Mathur, when he realises that he could now move with superhuman speed, decides to gather other people with similar abilities and form "an unstoppable Indian elite squadron" (Basu 91) who would take over the world and do whatever Jai asks them to do. To set his sinister motives in motion, Jai sets up a base in Kashmir near the Air Force base in Udhampur and recruits people like Sher, Mukesh, and others to do his bidding. With impending danger, Sher automatically takes up his animal form, as if in an instinct, his stripes appear, his arms broaden, and rippling muscles appear. For Sher, his enhancement was something he least expected because he used to be a wildlife conservationist and never thought that he would turn into a hunter. After he had caused considerable harm to Aman and his friends, better sense prevailed, and Sher joined Aman and his team to bring down Jai. After the fight in London where they defeat Jai, Sher decides to continue his work with Vir, Uzma and others in order to help out those who were in that flight and are still on the run. One of the affected passengers, Uzma Abidi, comes to Mumbai with big Bollywood dreams and finds that everyone in Mumbai naturally falls in love with her. On the fourth day in Mumbai, she has already achieved a lot and also "becomes the first outsider in the history of the Mumbai entertainment industry to turn a profit within their first week" (Basu 24). Even after all these, Uzma finds it extremely difficult to find a place to live in Mumbai because she is a foreigner who is also a Muslim. She is treated as the Other not only because of her superhuman abilities but also because of her religion. Aman tracks her down and invites her to be a part of his team. Slowly Uzma realises the true potential of her abilities, and she discovers that she could get anyone to obey her without any questions asked. Being a British Muslim woman, she has been treated as the exotic Other first in Lucknow and then in Mumbai.

Similar to Sher, Mukesh had been working with Jai from the beginning and was obeying whatever orders were given to him. His “long, forked and snake-like” tongue (Basu 62) does not instil the same fear as Sher does, but nonetheless, Mukesh’s abilities to turn into a snake proves advantageous to Jai and his missions. During Tia’s first encounter with Mukesh, he immediately transforms himself in order to take Tia down; his skin turns green and “large scales and leathery stretches emerge all over his body like fast-forward blisters” (Basu 72). His transformation to a snake is described more vividly:

His arms shrink, fingers curving as they shorten into talons. His eyes turn yellow, pupils morphing into vertical slits; his mouth broadens, elongates; his nose flattens; his hairline recedes. His forehead stretches and flattens out as his head changes into something terrible, reptilian, blood-curdling. His forked tongue slithers out obscenely between his gleaming fangs. It twitches. (Basu 72)

When transformed, Mukesh calls himself Poison and kills one of Tia’s copies by pushing his fang down her throat. Once he realises that Tia can have an infinite number of copies of herself since her dream was to be able to be present in multiple places at a given time, Mukesh accepts his defeat, and his features melt back within a few moments; he is human again. When asked about how he survived all the bullet wounds, he replies that he will live forever. At one point, Jai realises that Mukesh is not the strongest person to be on his team, so he sends him off on a suicide mission of intercepting the Shindes and preventing them from coming in contact with Jai and his army. The Shindes are a crime family who was on that same plane and had become more dangerous now. They are “criminals, politicians, brilliant entrepreneurs. Risen from the gutters, killing everything in their way” (Basu 173). Jai believed that the Shindes would be a powerful ally because “an efficient organised crime system is one of the cornerstones of every successful empire” (Basu 173). Jai’s plan does not work out, and Mukesh gets killed by the Shindes.

Traditionally, ableism has been regarded as a societal structure, a network of beliefs, communication practices, and institutional processes that describes a corporeal standard. Ableism casts an idea of a “normal” body and mind and ultimately speaks to the question of what it means to be human. In Basu’s novel, the passengers who took that flight face ableist discrimination both for being postcolonial and superhuman at the same time, exerted through various types of control nationally and internationally. Further, this is fueled by cyborg anxiety that refers to the fear that the embodiment of a non-normative person resists the boundaries of what it means to be normative, able-bodied and able-minded. This paper argues that Basu’s Turbulence critiques this notion of ableism by placing the people with superhuman abilities against the discussion that “the core of ableism is an idealised norm that defines what it means to be human” (Cherney 8). Further, the concept of speciesism similarly demonstrates how the political and social condition of neoliberalism demands an abled, normative corporeal standard. The bodies must be able-bodied, flexible and productive in order to meet the strenuous requirements of human supremacy. When a society privileges such a discourse, the non-normative bodies are more likely to be considered as the Other, the disabled, and not belonging to the ‘ideal’ category. Basu’s novel aims to deconstruct this disabled/abled binary and integrate perspectives from postcolonial and posthumanist theories into the study of disability. Goodley et al. (2014) explicitly works on the concept of aligning disability studies with posthumanist thought and argue that “disability is the quintessential posthuman condition” (348). The bodies of Sher and Mukesh explores this perspective as they deconstruct the man/animal binary, shifting the focus from the able body of a man to “understand[ing] the posthuman condition as one in which we constantly reflect on humanity rather than as a condition beyond humanity” (126).

The classical notion of the human is a self-aggrandising, abstract ideal and symbol of humanity that was born in Europe and was shaped through modernist and capitalist mouldings. Rosi Braidotti notes that humanity is very much a ‘he’, a male of the species. Moreover, “he is white, European, handsome and able-bodied” (Braidotti 24), who embodies ideal beauty, perfection, masculine, speaks a standard language, and is heterosexually inscribed in a reproductive unit. This notion of humanism has a Eurocentric core and Imperialist tendencies, suggesting that those residing in the colonies are naturally less than human or inhuman. That way, the Indian passengers who were in the flight were already less than humans, and once they gained superhuman abilities, they moved beyond an exclusive category for the human and embraced more planetary attributes. This not only means shifting away from what is understood as the human but also reclaiming their relationships with the environments, the world and human and non-human inhabitants of the planet. With Turbulence, Samit Basu shows that the posthuman man becoming an animal rejects the identification with a normative image of thought. The animal is no longer seen as the other in the posthuman context and is part of an environment that is non-hierarchical. The elevation of Sher and Mukesh as animals to the status of ‘individuals’ frees them from their status as Other and denies the humans their species supremacy. They forge a nexus between the postcolonial and the posthuman that enables the condensing of posthumanism’s crossovers with empowerment and colonial affective practices.

361 DISCIPLINING FUNGI GROWTH: PLANTATIONOCENE IN POST/SOCIALIST RUINS

Lukáš Senft (Institute of Sociology of the Czech Academy of Sciences) Tereza Stöckelová (Institute of Sociology of the Czech Academy of Sciences) Kateřina Kolářová (Institute of Sociology of the Czech Academy of Sciences)

Plantation production, characterized by simplified ecologies and disciplination of crops and workers is usually conceptualized and studied within the genealogy of market economy and capitalist production (Tsing, Mathews, and Bubandt, 2019; Tsing and Haraway, 2019). In this paper, we explore the Plantationocene conditions in the post/socialist space. Specifically, we focus on the production and economy of cultivated mushrooms in the Czech Republic. While being a country with a long and widely popular culture of collecting wild mushrooms, during the state socialist regime, mushroom cultivation was also developed within the centrally planned economy. In particular, the major state food company grew oyster mushrooms and added them to instant mushroom soups

distributed throughout the Eastern Bloc. After the end of the socialist regime in 1989, mushrooms became a subject of private business. Multiple newly established companies started to grow mushrooms on the remnants of socialist agriculture – in the spaces left abandoned after the regime change: cowsheds, pigsties, military areas. The situation changed again significantly after the Czech Republic joined the European Union in 2004, which opened the borders for cheaper button mushrooms from abroad. Smaller Czech companies have competed with this large-scale trade by becoming “environmentally sustainable”, and selling their mushrooms as commodities with a "product story" to upscale their businesses.

Based on field research and analysis of historical materials, we explore how has the Plantationocene grown in the post/socialist ruins. What ecologies, infrastructures and commercial strategies have been created and used by growers to engage in global markets with the commodities grown on the remains of the socialist regime? How were the socialist ruins transformed in the processes of the Plantationocene? What type of ecologies does the plantation-growth require in the case of mushrooms? Can it be “environmentally sustainable” and open to more-than-human growing capacities?

Room N112 - Panel 035. THE FUTURE OF VACCINE TECHNO-POLITICS: OUTCOMES AND LESSONS OF THE COVID-19 PANDEMIC

Stuart Blume (Emeritus Professor of Science & Technology Studies and a member of the Department of Anthropology at the University of Amsterdam)
Madhavi Yennapu (Senior Principal Scientist at the National Institute of Science, Technology and Development Studies, New Delhi, India, and a professor and Coordinator of its Academy of Scientific and Innovation Research)
Snjezana Ivcic (Croatian Academy of Sciences and Arts)
Vesna Trifunovic (The Institute of Ethnography, Serbian Academy of Sciences and Arts)

This proposal follows up the new book Immunization and States: The Politics of Making Vaccines, on which the conveners collaborated. The book focuses on public sector vaccine production in different countries from the nineteenth century onward. It ends with a brief sketch of the discussions and re-considerations provoked by two years of the Covid-19 pandemic. As the first effective Covid-19 vaccines became available, intense disputes and negotiations arose over monopolies on vaccine production and access to vaccine technologies, unequal global distribution of vaccines, and seemingly widespread distrust of new vaccines. Our proposal is for an exploration of the changes in vaccine development, production, deployment, and acceptance which the pandemic has introduced. What lessons can be learned, and what lessons are being learned, from current experience with Covid-19 pandemic/vaccination? In line with these developments, we propose three linked themes, focusing on areas where change in the field of vaccines is taking place with potential effects on future vaccine techno-politics:

INSTITUTIONS
Since the first Covid-19 vaccines were approved, the issue of global vaccine shortage has become increasingly important. This raised the question whether states should re-engage in developing, producing and distributing vaccines. Only a few countries still have public institutions able to develop and produce vaccines. The global mechanism COVAX, established to ensure that poor countries had access to vaccine supply, has proven inadequate. The first theme is a critical exploration of possible roles, effects and prospects of old (public sector) and new institutions (COVAX, public private partnerships, and regional networks) in ensuring future access to vaccines.

TECHNOLOGIES
Existing Covid-19 vaccines are based on a variety of technological 'platforms', some old (e.g. inactivation), some new (notably using mRNA and DNA). The novel mRNA technology, protected by countless patents held by a few biotech and pharmaceutical companies, has become extremely profitable. Regulatory approval was fast-tracked. There have been strident demands for compulsory licensing of these and other vaccine technologies. Vaccines, it is said are, or should be, 'global public goods'. This theme focuses on the significance of intellectual property regimes (TRIPS/TRIPS plus), and processes of regulation and of vaccine technology transfer (from where to where?). How can production of effective, safe and trustworthy vaccines be extended? Can rapid regulatory approval ensure safety and efficacy?

TRUST
At the start of the pandemic politicians everywhere insisted that ‘when there’s a vaccine we’ll go back to normal’. We now know that too much trust was being placed in vaccines. At the community level, by contrast, widespread lack of trust in vaccines, especially in rich Northern countries, has become clearly visible. Conspiracy theories, fears of vaccine side-effects, populism, and the increasing power of social networks are all implicated. This theme explores socio-political aspects of technology – the ways vaccine technologies and innovations are understood in and by the public, and how links to perceived political and economic interests affect vaccine acceptance.

Taken together, these linked themes will map out the changing landscape of vaccine techno-politics.

Session 1

255 COVID-19-VACCINE HESITANCY AMONG SELF-MADE EXPERTS IN A SWEDISH DIGITAL CONTEXT

Mia-Marie Hammarlin (Department of Communication and Media, Lund University, Sweden) Lars Borin (Department of Swedish, University of Gothenburg, Sweden) Dimitrios Kokkinakis (Department of Swedish, University of Gothenburg, Sweden) Fredrik Miegel (Department of Communication and Media, Lund University, Sweden)

Skepticism about vaccine effectiveness, adverse effects, personal beliefs and conspiratory claims as well as exposure to misinformation, plays an important role in decreasing rates of vaccination. Among the general public, serious discussion on vaccine uptake is often taken online on social networking sites. On the one hand, undecided

people's concerns should be prioritized and addressed even more by healthcare authorities, through frequent recurring campaigns and messages to counterbalance the strong anti-vaccine voices and, by better quality control of health communication on the Internet, applying strategies to boost vaccine acceptance by identifying the root causes of hesitancy in different populations. On the other hand, this problem seems hard to "inform away", especially if people rely upon ideologies and/or spiritual thinking when refusing vaccinations.

The aim of this exploratory presentation is threefold; 1. to identify the nature of sentiment in the discussions about vaccination expressed in digital environments during phases of the COVID-19 pandemic using posts and snippets from Swedish social media sites discussing pros and cons, posted between Sept. 2020 and Sept. 2021, automatically retrieved and quantitatively analyzed in terms of sentiment analysis; 2. to qualitatively identify analytical themes in some of these online discussions, focusing especially on what we call new technology imaginaries; and lastly, 3. to compare and contrast these digital findings with findings from qualitative interviews with 20 vaccine critical individuals.

The results indicate a potential shift towards decreasing belief in politics, established authorities and experts, and increasing trust in the individual's personal ability to make thorough research, both on- and offline and, on this basis, make correct vaccine decisions. Uncertain times, as a pandemic, might bring these tendencies to the fore.

486 CHALLENGING VACCINATION POLICY: VACCINE HESITANCY AS ALTERNATIVE FORM OF HEALTH CITIZENSHIP DURING COVID-19 PANDEMIC

Paolo Giardullo (University of Padova) Barbara Morsello (University of Padova)

Free vax movement in Italy got new momentum during Covid-19 pandemic relaunching its issues and further radically contesting the emergency management from its basis: diagnostic methods, mobility restrictions and even information management. Indeed, since early beginning of the pandemic, free vax groups across Italy put under scrutiny the health policy management in context of high uncertainty. Presently, mass vaccination is the health policy most widely adopted by governments to address contagion and, as literature on the topic shows (Holmberg et al., 2017; Blume, 2017), any time a new vaccine policy is introduced, controversy arises, soliciting heterogeneous positions (Gobo, Sena 2019). Our paper aims at investigating free vax movement as promoter of an alternative health policy proposal. We examined this movement, based on a specific conception of body, health and belonging, through 18 months digital multi-sited (Hine 2004; Marcus 1995) ethnography of free-vax online community in Italy during Covid-19 pandemic following Facebook and Telegram accounts. We focused on the "strategies" of free vax communities for promoting alternative views of "health citizenship" (Petrakaki et al 2021), and to discard institutional vaccination campaign and policy, trying to legitimate their claims, both working with and challenging experts and expertise (Labonté, 2013). Analytically we concentrated onto 1) the "forum" (Collins & Pinch, 1979) in which the claims and knowledge of the free vax communities are placed (e.g. biomedical; political; scientific); 2) the institutional actors with whom communities dialogue (e.g. national health institute; WHO; parliament), 3) the strategies for supporting their knowledge and claims.

We will give account of strategies supporting an "alternative idea of citizenship" as enacted by free vax communities. They build upon a mobilization of semantic repertoire referring to scientific methodologies to present "alternative scientific facts" and a direct reference to right to transparent scientific and health information as a civil right.

864 POLITICS OF FRAMING AND THE DIGITAL COVID CERTIFICATE. CO-PRODUCING EPISTEMIC AND NORMATIVE RATIONALITIES IN THE ITALIAN GREEN PASS DEBATE

Luca Marelli (KU Leuven)

This proposed presentation links up to the 'trust' theme of the panel, which set out to probe socio-political aspects related to Covid-19 vaccines, by focusing on the introduction and progressive extension of the digital Covid certificate in the Italian context. The 'Green Pass', as the national health pass is known, has been conceived as the undisguised attempt by the Italian Government to propel the Covid-19 vaccination campaign through political nudging, and has represented one the strictest enforcements of health pass mandates in a liberal democracy worldwide, triggering heated debates and intense political controversies.
Besides tracing the main policy developments, at both the European and Italian level, around the digital Covid certificate, this paper set out to reconstruct the articulation of the Italian public discourse around this policy, charting the main disputed issues and the contrasting arguments and framings used by its proponents and critics. Building upon a co-productionist perspective as developed within the field of Science & Technology Studies (STS), the paper sheds light on the mobilization of mutually reinforcing normative arguments and understandings of scientific evidence in the construction of claims around the Green Pass. Notably, competing framings were articulated around diverging conceptions of liberty in times of a pandemic; what should be considered as 'evidence that matters' on Covid-19 vaccines; value-laden projections about vaccination as either an act of self-protection, or a solidaristic practice; the proper relationship between State and citizens vis-à-vis vaccination policy; and the most appropriate modes of public health intervention during a pandemic. As the Green Pass emerges as a

revealing test case for probing the (re-)structuring of the Italian 'social compact' in times of a pandemic, the presentation discusses the implications of this normative technology in terms of public health effectiveness, democratic legitimacy, and disciplining effects.

633 LIVING WITH VIRUSES: THE CONCEPTUALIZATION AND COMMUNICATION OF THE MUTUAL DEVELOPMENT OF THE IMMUNE SYSTEM, VIRUSES, AND VACCINES

Hanne Castberg Tresselt (University of Oslo, TIK Centre for Technology, Innovation and Culture)

A challenge with new viruses is that neither the immune system nor society know how to handle them. When covid-19 arrived as a novel virus for humans in 2019, it offered those working with new mRNA vaccine technology the potential to position their work as part of the solution to this crisis. The novelty of both the virus and vaccine propelled many immunologists into new roles in science communication. Drawing on analysis of a Norwegian blog and podcast on the immune system as well as interviews with researchers at an academic research institute, this paper explores how descriptions of the new vaccine technology as a new paradigm and as the only solution to future pandemic crisis, creates space for a specific conceptualization and enactment of the immune system and the relation between humans and viruses. Vaccines are often described as a way to educate the immune system (e.g. Martin, 1994). A challenge with this description, is the one-directional move between the (vaccine) educator and the educated (immune system). This is no longer a fitting description of how the researchers explain virus/immune system/vaccine interactions through ideas of mutual development. Neither does it encompass the special qualities of the new technology as targeted, tailor-made, and easily adjustable to future unknown challenges. This paper suggests to sharpen the education metaphor and use 'Bildung' (Klafki, 2001) as a more accurate concept. It highlights not only the training aspects of vaccines, but also the dynamic relation between the content of the education with the sociality you are educated into. This perspective sheds light on how vaccines facilitate "living with" a virus for the immune system and the population, and vice versa, how this specific enactment of the immune system and viruses facilitate the new vaccine technology.

Room N117 - Panel 051. METHODOLOGICAL EXPERIMENTS IN STS: EXPLORING DIGITAL AND (QUALI-) QUANTITATIVE METHODS

Session 3

615 THE BIBLIOMETRIC RECONSTRUCTION OF RESEARCH BIOGRAPHIES – EXTENSION TO THE SOCIAL SCIENCES AND HUMANITIES

Markus Hoffmann (TU Berlin) Asia Mironenko (TU Berlin) Grit Laudel (TU Berlin) Jochen Gläser (TU Berlin)

The research biographies of researchers, research groups, scientific communities and other collectives that produce scientific knowledge consist of research trails, i.e. sequences of thematically interconnected projects in which findings from earlier projects serve as input in later projects (Chubin/Connolly 1982). Research trails are important features of researchers' careers but also offer insights into the development of research of collectives. Since reconstructing the content of a research biography is notoriously difficult for outsiders, a bibliometric reconstruction of research trails is the best approximation of the thematic structure of research biographies.

Graphical representations of research biographies were introduced as tools for eliciting narratives about the development of an interviewee's research content, especially topical changes, and other biographical events (Gläser/Laudel 2015). In this presentation, we will report experiments with extending the method beyond the sciences and beyond its representational function in interviews with researchers. (1) The limited coverage of publications from the social sciences and humanities have so far forced us to use rather coarse and imprecise surrogates of bibliometrically reconstructed research biographies in these fields. We present techniques for harvesting references from PDFs and matching non-source items in reference lists that extend the range of fields in which research trails can be constructed. (2) We demonstrate this new functionality by an application of research trails for an analytical purpose, namely the identification of research trails in the STS community from articles in two core journals (SSS and STHV).

Chubin, D. E. and T. Connolly (1982). "Research Trails and Science Policies." In Scientific Establishments and Hierarchies. N. Elias, H. Martins and R. Whitley. Dordrecht, Reidel: 293-311.
Gläser, J. and G. Laudel (2015). "A Bibliometric Reconstruction of Research Trails for Qualitative Investigations of Scientific Innovations." Historical Social Research 40(3): 299-330.

612 THE BIBLIOMETRIC RECONSTRUCTION OF RESEARCH BIOGRAPHIES - EXTENSION TO ANALYTICAL PURPOSES

Grit Laudel (Technical University of Berlin) Tobias Lehmann (Technical University of Berlin) Asia Mironenko (Technical University of Berlin) Matthias Held (Technical University of Berlin) Jochen Gläser (Technical University of Berlin)

The research biographies of researchers, research groups, scientific communities and other collectives that produce scientific knowledge consist of research trails, i.e. sequences of thematically interconnected projects in which findings from earlier projects serve as input in later projects (Chubin/Connolly 1982). Research trails are important features of researchers' careers but also offer insights into the development of research of collectives. Since reconstructing the content of a research biography is notoriously difficult for outsiders, a bibliometric reconstruction of research trails is the best approximation of the thematic structure of research biographies.

Graphical representations of research biographies were introduced as tools for eliciting narratives about the development of an interviewee's research content, especially topical changes, and other biographical events (Gläser/Laudel 2015). In this presentation, we will introduce experiments with applications of the method for analytical purposes and necessary technical improvements currently under way. (1) We began to use bibliometric reconstructions of research biographies for the comparative study of a larger number of research biographies without corroboration by interviews, namely research biographies of researchers from the GDR and of researchers who may have experienced significant failure in their research. (2) These analyses require more robust methods of bibliometric analysis and the inclusion of more bibliographic information. We demonstrate the inclusion of additional bibliographic information and its representation in visualisations of research trails, interactive graphical representations of research trails that support zooming in on specific clusters, periods, or bibliographic information, and the creation of open-source versions of the underlying programmes.

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969 FINAL VERSION: HACKATHON AS METHOD: PARTICIPANT OBSERVATION FOR COMPUTATIONAL TIMES

Gro Skorpen (University of Oslo)

As ethnographers of the digital, we try to get at the digital practices performed on a computer, whether our interlocutors work with algorithms or other digital devices. However, the ethnographer arguably cannot “get into” the practice without invading the personal space and professional privacy of the person using the computer when we observe people going about their business on the screen.

In my ongoing fieldwork in the datalab of Norwegian national auditors, my object of study is machine learning as bureaucratic process. As a result, I am inclined to argue the algorithm can be reached by studying its social life (Amelang and Bauer 2019), that the computational practices can be teased out in conversation and studied in the shared practices of the community. But what are the aspects of algorithmic knowledge that we cannot get at with sufficient legwork, that classic ethnographic device? In cases where want to stay within the realm of ethnography, rather than exploring the affordances given to us by using computational methods, the question becomes: How do we get at the convoluted materialities of digital practices?

Drawing on empirical material from an event I took part in as part of my fieldwork, I propose to experiment with the hackathon as a methodological device (Garnett 2018) that can usefully be employed to expand our register as STS researchers. When we have interlocutors that will allow us to work alongside them, even just doing the menial chores, the hackathon provides an opportunity to take part in the computational practices the way Hortense Powdermaker (1966) thought it essential to take part in the dance of the people she studied. The hackathon as an experimental and experiential mode can prove a way to hack our way out of the social/computational conundrum of ethnographic practice within datafied modes of reality.

Room N109 - Panel 058. ALGORITHMS WE LIVE BY AND RESIST. HOW ARTIFICIAL INTELLIGENCE RESHAPES DAILY ORGANIZATIONAL PRACTICES AND CONTROL

Roland Bal (Erasmus School of Health Policy & Management, Erasmus University Rotterdam)
Lieke Oldenhof (Erasmus School of Health Policy & Management, Erasmus University Rotterdam)
Iris Wallenburg (Erasmus School of Health Policy & Management, Erasmus University Rotterdam)
Brit Ross Wintereik (IT University of Copenhagen)

Artificial Intelligence (AI) and machine learning are portrayed as an emerging promise in our evolving world, forestalling a digital and yet unknown future. Consumer-oriented mobile technologies offer new ways of capturing a digital organizational understanding of how people behave and interact. AI is seen as a promissory solution to urgent societal problems like workforce shortage, unmet social needs, welfare inequality, personalized medicine and precision welfare. However, AI is also viewed as a sincere threat to human well-being. The 'googlization' of healthcare and welfare would enlarge our dependency on corporate actors like Apple, Amazon and Facebook for the delivery of essential public goods (Sharon 2020). Also, automated eligibility systems and predictive risk models increasingly decide on who receives public resources, who is short-listed (or not) for employment, and who is 'red flagged' and investigated for fraud (Eubanks 2018). Rather than enhancing well-being and good organizational life, AI would foster traditional power relationships and discriminate the ones that most need government protection and support (D'Ignazio & Klein 2020).

In this panel, we reconsider the big dreams, threats and contested imaginaries of AI in contemporary welfare states. We explore how (both public and private, for profit and non-profit) agencies organize for, and work with AI, and what contingencies they produce. We aim to empirically scrutinize and theoretically conceptualize how AI emerges from the micro-activities of organizational actors, data scientists and clients, and how these activities become part of AI-driven service delivery – but also, conversely, what organizations or occupational practices may be indifferent to the algorithmic wave. We are interested in how AI emerges as, and is embedded in new ways of thinking about public and private agencies and control; how it disciplines both workers and recipients, and how this may also ensue practices of algorithmic indifference and resistance (e.g. in the form of 'algoactivism' (Kellogg et al. 2020) – and with what consequences for the social good.

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Session 1

22 GETTING A GRIP: M-HEALTH TECHNOLOGIES AND TACTILE RESISTANCE

Michelle Charette (York University)

Ways of touching (slowly, quickly, spasmodically, with trepidation, with confidence) indicate more than what someone feels at the tips of their fingers. Touch enacts the ontological complexities of material surfaces and is a complex, multisensory way of knowing (Alvarez 2021, 17). My paper explores mobile health (m-Health) technologies, specifically symptom management platforms, through the patient's tactile experience. Based on early sensory ethnography conducted with individuals who use symptom reporting platforms for musculoskeletal pain management, my interlocutors and I explore how tactility, technology, ease of use, and resistance are intertwined.

Touch perception is relevant to social science researchers interested in algorithmic justice because digital touch interactions between user and screen/device constitute the relationship between user and algorithmic tool, without which there could be no datafication of care. Social scientists working on digital touch communication focus largely on how digital touch newly constitutes our experience of communication. My research asks: what is the experience for the user whose embodiment resists wanting to hold a smart device for a prolonged period of time? Do some technology-body relationships resist the algorithm?

I begin by defining digital touch communication, which is essential for the accumulation of m-Health data. Then, I discuss my approach to studying touch perception and offer some preliminary findings based on ethnographic fieldwork and interviews with patients/users. I conclude with a discussion of the implications for improving ease of use. I suggest that this is both a necessity for care as well as a concern, especially for researchers interested in algorithmic justice and the quantified self. I ultimately argue for further interdisciplinary research on the relationship between tactility and digital data in healthcare, and the habits formed therein.

109 THE CHANGING ROLES OF STREET-LEVEL BUREAUCRATS IN THE DIGITAL WELFARE STATE: DEVELOPING NEW NORMS TO DEAL WITH DATA TOOLS

Margot Kersing (Erasmus University Rotterdam) Liesbet van Zoonen (Erasmus University Rotterdam) Lieke Oldenhof (Erasmus University Rotterdam) Kim Putters (Erasmus University Rotterdam)

The welfare state is currently undergoing a transition towards data driven policies, management, and execution. This has important repercussions for street-level bureaucrats in such a 'digital welfare state'. So far, impact of data driven tools on street-level bureaucrats is primarily described in terms of curtailing or enlarging their discretionary space to make decisions. It is unclear however how daily work practices and role identities of street-level bureaucrats change in situ and which norms they develop to work with new data tools. In this article we present an empirical study about the impact of a data dashboard in the Work and Income department of the city of Rotterdam. We pose the following research question:

Which role identities, work practices, and norms of appropriate behavior of street-level bureaucrats in the social domain are reshaped by the introduction of a data dashboard?

We use a multiple methods design consisting of semi-structured interviews, ethnographic observations, and document analysis. Our results reveal two role identities among street-level bureaucrats: (1) the client coach, and (2) the caseload manager. We show that the implementation of the dashboard enforces a shift from a client coach role identity towards a caseload manager role identity and that this leads to role identity conflicts among street-level bureaucrats who prefer a client coach role. Furthermore, we establish that the accommodation of the institutional void in which the introduction of the dashboard takes place, is centered around three themes of contestation: (1) data quality, (2) quality of service provision, and (3) data representations.

353 HOW PLATFORM WORKERS JUGGLE JOBS: ALGORITHMIC MANAGEMENT AS PART OF DISTRIBUTED WORK PRACTICES

Francisca Grommé (Erasmus University Rotterdam) Jans Berden (Erasmus University Rotterdam) Claartje Ter Hoeven (Erasmus University Rotterdam)

One of the most visible social consequences of AI is the increasing prevalence of platform work. We examine a particular aspect of this development: the 'promise of flexibility' supported by platform apps such as Uber. Supported by the promise of algorithmically organised, adaptable, task-based work, platform work is often taken up to complement other sources of income ('hybrid work'). It therefore seems that algorithms play a role in how people organise their work lives in the context of income precarity and the flexibilisation of the labour market.

Based on ongoing qualitative interviews with platform workers in the Netherlands, we ask if and how the algorithmic organisation of work plays a role in how platform workers combine jobs. We are interested in how platform workers narrate their uptake of platform work, and if and how they shape their work lives in relation to their experiences with algorithmic management. For instance, we know that not being available for a platform task may lead to declining rates per task, thereby limiting the flexibility needed to combine jobs. On the other hand, the absence of a manager can also support an 'entrepreneurial' career trajectory valued by a large group of workers.

We contribute to an ongoing conversation in STS on algorithms by 1) understanding algorithms as part of distributed forms of work across organisational contexts; 2) considering the role of algorithms in relation to how workers narrate their career histories and futures; 3) learning from workers if and how we should (de)centre algorithms in our analyses.

562 DIFFERENCE AS A SITE FOR INTERVENTION: THE CASE OF WEARABLE COMPUTERS

Ana Viseu (ICNOVA, Univ. Nova de Lisboa; IADE-Universidade Europeia)

Most, if not all STSers take as the starting point to their inquiries the notion that humans and nonhumans are co-constructed. Concepts such as 'mutual constitution', the 'sociomaterial', the 'sociotechnical', or the 'material-semiotic', bring forth the connections and entanglements between technologies, sciences, humans and other animals, between materials and meanings, reminding us that we live in cyborg worlds. Together, these concepts

and principles have provided STS with a language, a theory and a method to take the world seriously, to simultaneously account for its materiality and sociability. These tools have allowed us, in Haraway's words, to "stay with the trouble". But, what happens when we are in 2022 and who we are and the technologies we use have become so entwined that it is hard, if not impossible, to extricate one from the other? What happens when difference is also a matter of power? The question of difference is ever more important because in many ways, technoscience and its algorithms have emerged as the greatest leveler, the great cybernetic apparatus: we are all the same for algorithms. Modern day cybernetics, the one that is imposed on us by companies such as Facebook, Google, or Apple, and the one that is enacted by us in our everyday lives, have transformed the world into a problem of coding. We have become information (or, to use its contemporary valence, we have become data). How, then, do we articulate the differences between different human and nonhuman actors? Where do we cut the network to make these differences visible? This paper draws upon an ethnography of wearable computer deployment and use conducted in 2003-2004 in a telecommunications company to examine the ways in which there is room for resistance and subversion in the road to becoming information.

947 THE CONTROVERSIAL ARRANGEMENT OF CITIZEN-USERS, A MOBILE INTERFACE AND THE STATE: ELEMENTS FROM THE ALICEM EXPERIMENTATION IN FRANCE

Marie Alauzen (ENS PSL)

Is AI about to transform the relationship between users of public services and the state? The case study submitted to the panel focuses on the experimentation, starting in 2019, of a digital identification technology for French citizens, named ALICEM. The application mobilizes a facial recognition algorithm generating a novel arrangement between users of public services, their cell phone and a Europeanized and technologically amplified state. The experimentation of this technology for public service purposes has revived the historical controversy over the modalities of personal identification in France and opened a debate on the use of automated recognition in which the state has assumed an experimental posture aimed at neutralizing social conflict.

Based on studies on identification technologies and the sociology of controversies, I will highlight two recompositions in the relationship between the state and political society brought by this artificial intelligence technology: the diffusion of a position of experimental psychology by the public authorities and the signal that the state sends to the actors of the big French and European industries.

The paper is based on three sources of data: (i) documents published in the media (print and online press, television, radio, social networks), between March 2016 and March 2020, (ii) institutional literature and expert documents produced by stakeholders (regulations, public reports, administrative memos, litigation file), (iii) interviews with designers, evaluators, and promoters of the application (n=7) and observation of debate arenas (public debates, parliamentary hearings, activists' meetings) between July 2019 and June 2020 (n=15).

Room N115 - Panel 062. MAKING SCIENCE IN PUBLIC: STUDYING SCIENCE COMMUNICATION AND PUBLIC ENGAGEMENT

Session 2

685 SCIENCE IMPROV: IMPROVISED COMEDY AS SCIENCE COMMUNICATION

James Dolan (University of Cambridge) Hauke Riesch (Brunel University) Oana-Catalina Mihai (Pop Up) Massimo Carraro (University of Copenhagen)

For the last two decades, scientists in the UK have been asked not only to communicate more, but to communicate better—to collectively enter into bidirectional dialogue with the public. Dialogue implies the ability to listen, to accept another's perspective and worldview, and to be willing to change one's attitudes and behaviours in response to what one hears. The "dialogic turn" in science communication finds a new and unlikely analogue in improvised comedy and the principles it exhorts. Indeed, trained improvisors are attuned to a range of sensitivities which mirror those expected of the ideal, enlightened scientist-communicator. However, humour in science communication is a nascent area of study, and improvised comedy (or theatre) remains entirely unexplored as a form of science communication.

Recently, a small number of science-themed improvised comedy groups have emerged in the US, the UK, and mainland Europe. The emergence of these groups goes beyond the use of improv as a form of science communication training, perhaps most famously deployed by the Alan Alda Center for Communicating Science. In this paper, we report on initial results of a project to understand and explore, though written accounts and semi-structured qualitative interviews, how scientists and science communicators from four such groups have deployed improvised comedy as a form of science communication: their motivations and experiences, the performances they create, and the peculiarities of using improvised comedy as a form of science communication and public engagement. In doing so, we explore how the use of this novel medium speaks to contemporary discourses surrounding "good" or "effective" science communication, and explore whether and how a medium rooted in dialogical principles of interpersonal interaction offers any insights for the field of science communication more generally.

175 IMMERSIVE THEATRE; CITIZENLY CO-CREATION OF SPECULATIVE-ETHICAL-FUTURES

Bentley Crudgington (University of Manchester)

In discussions around how society views animal research, public opinion is often presented as a concern requiring careful management. A concern that can threaten public trust and support and therefore scientific governance and progress. There is an assumption that such concerns arise from misunderstandings that can be alleviated simply by supplying more information.

The continual circle of concern to resolution through (re)education maintains the polarised nature of much past debate around animal research and limits opportunities for supporting nuanced conversations. However, previous experiments with the form of citizen juries and ethical review panels suggest that the barrier to public engagement with complex and controversial issues across science, technology and society, is not the amount or quality of information available, but the lack of an accessible framework in which to explore choices and responses to information.

In 2018, Vector was developed; an immersive theatre experience which uses elements of performance, game, and integrated technology. Vector enables participants to occupy active positions through which to explore their ideas about animal research, rather than being cast as passive witnesses to processes they cannot influence. Using the scenario of an imaginary ethical review board tasked with future proofing vaccine productions during global pandemics, participants explore more complex, nuanced, and empowering conversations in which they learn about their own views and the views of others.

Immersive theatre can be considered as inter-personal performance which brings together dialogical and relational aesthetics. It is the praxis of reconstituting social relations, which resists re-presenting normative moral obligations in favour of co-creating thick, impure involvement in a world where the question of how to care needs to be posed.

This paper shall explore how Vector offered methodologies for citizenly co-creation of speculative-ethical-futures, where participation is not contingent on how one should act, but radically open to how one might act.

627 ENGAGING PUBLICS' PERCEPTIONS OF ENVIRONMENTAL CRISES: SOME NOTES TOWARDS A PARTICIPATORY VISUAL APPROACH

Erik Aarden (University of Klagenfurt)

Environmental crises such as climate change and the rapid loss of biodiversity are some of the most contentious public problems of the present. Yet, despite widespread claims that the “science” on the scale, consequences and possible solutions of these problems is “clear”, many scholars in STS and affiliated fields have pointed out that mere communication of the facts in the public domain has not been sufficient to promote political change. Moreover, various studies of (visual) representations of environmental problems in both scientific and mass media have pointed out that a rather narrow framing of the issues continues to be reproduced, even when appealing to more affective registers of engagement. Yet it is unclear if and how these forms of communication resonate with different publics’ (pre-existing) perceptions of environmental issues.
In my contribution to this panel, I will sketch out a line of research that aims to elicit “public perceptions” of environmental problems by means of experimental forms of participatory visual research. Rooted in projects I have started developing with different environmental organizations in Austria, I seek to explore the methodological viability for STS research on science communication and public engagement of extending an invitation to different kinds of ‘publics’ to visually capture and reflect on their encounters with climate change, biodiversity, etc. I will propose that this approach may provide insight into publics’ perceptions of environmental issues that explicitly draw on their emotional, aesthetic and experiential dimensions. I further posit that this approach can thereby (potentially) circumvent certain presumptions about public knowledge reflected in how environmental problems are framed in professional communications – or can at least make visible if and how parallel repertoires exist. This, I argue, may also broaden STS engagement with environmental issues and perhaps suggest alternative ways of thinking towards solutions.

Room N116 - Panel 069. THE TIMES OF MAINTENANCE

Session 2

314 MAKING THINGS LAST. MAINTENANCE AND THE ONTOLOGICAL POLITICS OF DURATION

Jérôme Denis (Mines Paris - Center of sociology of innovation) David Pontille (CNRS - Mines Paris - Center of sociology of innovation)

In this communication, we investigate how duration is concretely cultivated in maintenance practices. We show that, more than a mere “social construction of time” through which people would shape a specific temporality for the objects they take care of, maintenance is articulated to certain problematizations of time. Maintenance is indeed a daily struggle against different aspects of the “time that matter does” (Barad, 2013), which constantly endangers the things that humans hold valuable.
These struggles are in no way univocal, though. Just as multiple “temporal regimes” can be identified over the course of history (Hartog, 2015), there are different manners to make things last, and thus to problematize the time of things that are taken care of. Drawing on the growing literature in maintenance and repair studies as well as our own investigations, we identify four ways of dealing with time in maintenance. The first one aims at prolongation, and consists in “merely” extending the life of an artifact. On the opposite, the second one strives for permanence, which requires a significant amount of work and resources. A third form involves a process of slowing down, in which maintenance is carried out to slightly postpone the inevitable disappearance of objects. Finally, we highlight a fourth — rather counter-intuitive — form in which things last longer than expected, and confront people to their stubbornness.

While these four forms of time problematization configure the conditions in which things may last, we show that they also convey specific “ontological enactments” (Woolgar & Neyland, 2013) in which what concretely counts for a thing to remain “the same” vary.

534 TIME TRAJECTORIES AND ASSOCIATIONS IN HOUSE-MUSEUMS MAINTENANCE: A SITUATED UNDERSTANDING

Gianluigi Viscusi (Imperial College London, UK) Chiara Rubessi (Istituto Superiore per le Industrie Artistiche (ISIA), Firenze, Italy)

This article analyzes the various maintenance practices and their different time trajectories in the specific setting of heritage, or what we would define as “maintenance of memory”. In particular, we are interested in the different associations of artifacts-maintainers (Latour, 1984) and the different temporalities that they enact (Barad, 2014) either as representation (for example as the setting of movies) or exhibition (for local events not connected with the original historical context). Furthermore, the article investigates the entanglement of power and maintenance (Jackson, 2014) in the resulting hierarchies that time(s) and the materiality of their supporting spaces eventually exhibit. For example, some areas considered at low maintenance can be simply “repaired” for occupation by science and technology fairs or events, while other areas are considered as electives for replicating and enacts the duration of the “original” time-space or generating new possible time-space representation reflecting the values exhibited by the original time-space materiality. To this end we consider the case of a heritage site, the house-museum Villa Necchi Campiglio in Milano, Italy. Completed by the architect Piero Portaluppi in 1935 for the Necchi Campiglio family, part of the rich industrial middle class of Milano in the 1930s, the house presents different association artifacts-maintainers and different time representations resulting from the maintenance work carried out over the years. The study is based on an ethnographic study and an analysis of archival materials on the history of the maintenance of the site. The research aims to provide a situated understanding of the unfolding of multiple-time configurations enacted in spaces that aim at the “maintenance of memory” and how these different times are combined, kept apart, or hierarchized, where science and technology intervene in the materiality of the associations of the diverse artifacts-maintainers as well as in the appropriation of spaces-time representation.

1036 BETWEEN THE RUNS – CONTINUATION AND INNOVATION IN THE SHUTDOWN OF A PARTICLE DETECTOR

Daria Jadreškić (University of Klagenfurt)

CERN’s Large Hadron Collider (LHC) is planned to start its Run 3 in 2022 after a three-year Long Shutdown 2 (LS2). During LS2, two of its biggest particle detectors, ATLAS and CMS, have been undergoing Phase 1 Upgrade, the first of the two upgrades that will make them compatible with High-Luminosity LHC (HL-LHC) planned to start with operation in 2027-2028. HL-LHC will be probing new physics at unprecedented energy scales and collision rates until the end of the HL-LHC operation in 2034.

The talk first identifies and analyzes notions of maintenance employed by the physicists and engineers involved in the upgrade of a subsystem of the ATLAS detector. They can mean maintenance during everyday operation, yearly maintenance of the supporting infrastructure such as powering and cooling systems, and finally, longer shutdowns as the designated maintenance time in the lifetime of a detector, when the ATLAS 'opens' and the subdetectors it consists of can be physically accessed. These different notions of maintenance can be captured by the categories of maintenance as 'repair', 'prevention', 'devaluation', and 'revaluation', thus corresponding to different types of retrospective and prospective care practices (Schabacher 2021).
However, the shutdown upgrade periods necessarily intertwine maintenance with innovation, since the prospective direction of care doesn't exhaust in the aim of continuation, but also in designing and implementing innovative solutions whose temporalities have a fixed, planned endpoint – the end of HL-LHC operation. The talk aims to show how continuation and innovation coevolve and constrain one another in a detector upgrade. It is based on qualitative interviews with physicists and engineers involved in the upgrade of an ATLAS subdetector.
Schabacher, Gabriele. 2021. "Time and Technology: The Temporalities of Care", in Volmar, A. and K. Stine (eds.), Media Infrastructures and the Politics of Digital Time: Essays on Hardwired Temporalities. Amsterdam University Press.

939 EXPLORING THE MAINTENANCE OF MULTIPLE INFRASTRUCTURAL LIVES: THE CASE OF THE ZWENTENDORF NUCLEAR POWER PLANT IN AUSTRIA

Céline Parotte (University of Liège)

Austria is a country well known for its strong opposition to nuclear energy, the political turning point of which came in 1978 with the national referendum that prevented the operation of the then newly built Zwentendorf nuclear power plant (NPP).

Today the facility stands as a material symbol of a nuclear future that never materialized. Yet, this building complex composed of 1,000 rooms that were built up with up to three meters of steel-reinforced concrete is still maintained for several uses that accumulate over time (EVN - Austrian NPP owner 2022). In 2005, engineers transformed the plant and turbine halls into a training center for nuclear operation and prevention process and decommissioning practices. In 2009, the cables and the electricity distribution system were adapted to the production of solar energy. Some other parts of the plant have recently been converted into "animal-friendly infrastructure" (e.g., birds nest atop the exhaust stacks. Last but not least, Zwentendorf can also be rented out for artistic (filming, photography, music festivals) and private uses.

Based on official website analysis, IAEA archives, virtual and on-site observations and semi-directive interviews with representatives of Zwentendorf maintainers and users (e.g., the EVN, Powertech Training Center, the Vienna University of Technology, the Photovoltaic Research Centre Zwentendorf, municipality, Association of Austrian Hedgehog Friends), this article explores how the same infrastructure can live multiple lives incidentally, which are inscribed and overlapped in time and space. It highlights how Zwentendorf's infrastructure concentrates practices of repair, maintenance, abandonment and repurposing (Schabacher 2021) and how it could be considered as an 'non-monotonic' transformation process - where the dynamics in question unfold in more undulating (regular or messy) ways, through different episodes or loci of change (Cairns et al. 2021, 15).

363 THE MAINTENANCE OF VITALITY: CONFLICTING TEMPORALITIES IN THE FIELD OF CRYOBANKING

Ruzana Liburkina (Goethe-Universität Frankfurt) Sara Lafuente-Funes (Goethe-Universität Frankfurt)

Cryobanks are maintenance sites par excellence: they are essentially devoted to maintaining vitality against the odds of biological time (Radin & Kowal 2017, Radin 2017), and they are intricate sociotechnical infrastructures in constant need of maintenance practices (ibid.). In this paper, we focus on what happens when the reasons for maintaining biological matter change over time. It brings to light frictions between the vision of everlasting cryotechnological maintenance and short-term demands posed by market, regulatory, and clinical logics. We draw on two case studies characterized by divergent dynamics: cryobanks in reproductive medicine and cord blood banks. The former, studied in Spain, are part of a constantly growing industry with high benefit rates (Waldby 2019, van de Wiel 2020). The latter, studied in Germany, have passed through a period of hype and are struggling to maintain their operations (Williams 2015, Beltrame 2020). We ethnographically zoom in on economic, organizational, and technological maintenance efforts in both settings. This comparative ethnographic approach shows how the rationales for maintaining cells shift and hence change the status of the biological material itself – even if the aim is to keep it intact. Thus, frozen embryos or eggs maintained for reproductive means may become long-term preserved instantiations of vitality with different destinies, even constituting a "storage problem." Precious stem-cell-containing cord blood samples, in turn, may become a means to a very different end or a burden. These cases suggest that short-term economic and technological maintenance of long-term maintenance projects can re-define the matter being maintained itself. Equally, though, these twists might unexpectedly render an ending of maintenance endeavors improbable.

Room N111 - Panel 091. THE SHARING ECONOMIES OF TECHNOSCIENCE

Session 1

122 DATA SHARING PLATFORMS FOR COHORT DATA: INSTRUMENTS TO REFORM SCIENCE POLICY ON DATA SHARING?

Thijs Devriendt (KU Leuven)

Data infrastructures are being built to enhance the sharing of cohort data. Privacy-sensitive data is safeguarded under the control of data access committees (DACs) located at each research institution. The contacting of these DACs commonly happens via professional email or occasionally institution-based data request systems. In practice, data holders may therefore reject any requests for data sharing for personal reasons (e.g., competitive advantage). Incentivizing data sharing via reward systems is difficult because cohort data are currently not linked to citable persistent identifiers (PIDs) within these institutional data deposition systems. I argue that data sharing platforms can overcome this limitation by systematically monitoring the functionality of DACs and tracking detailed usage indicators on each data request. The aggregation of this information over all platforms would then enable the development of complex process and outcome indicators on data sharing. Process indicators may give an indication of the FAIRness of data (e.g., percentage of requests approved) while outcome indicators may be used to “quantify” data sharing with different societal actors (e.g., commercial companies, non-profits…) and the inclusion of citizen scientists. Some of these indicators could be used within narrative review as part of the profiles of so-called “data producer” or “infrastructure” scientists (i.e., those whose labor is primarily oriented towards building and making available resources). Additionally, platforms can help in creating parallel tracks for attribution systems by endorsing concrete guidelines for the field-specific application of contributorship. Because contributorship allows recognizing those whose labor was formerly invisible within authorship systems, such information could, in principle, be used in narrative review of CVs in tenure or grant review.

85 EDITORIAL WORK AND THE PEER REVIEW ECONOMY OF STS JOURNALS

Wolfgang Kaltenbrunner (Leiden University) Kean Birch (York University) Maria Amuchastegui (York University)

In this talk, we present an analysis of the role of science and technology studies (STS) journal editors in organizing and maintaining the peer review economy. We specifically conceptualize peer review as a gift economy running on perpetually renewed experiences of mutual indebtedness among members of an intellectual community. While the peer review system is conventionally presented as self-regulating, we draw attention to its vulnerabilities and to the essential curating function of editors. Aside from inherent complexities, there are various shifts in the broader political–economic and sociotechnical organization of scholarly publishing that have recently made it more difficult for editors to organize robust cycles of gift exchange. This includes the increasing importance of journal metrics and associated changes in authorship practices; the growth and differentiation of the STS journal landscape; and changes in publishing funding models and the structure of the publishing market through which interactions among authors, editors, and reviewers are reconfigured. To maintain a functioning peer review economy in the face of numerous pressures, editors must balance contradictory imperatives: the need to triage intellectual production and rely on established cycles of gift exchange for efficiency, and the need to expand cycles of gift exchange to ensure the sustainability and diversity of the peer review economy.

655 PRACTICES AND REPRESENTATIONS OF DATA SHARING AND DATA PROTECTION WITHIN RESEARCH COMMUNITIES PRACTICING OR ACCOMPANYING ETHNOGRAPHY

Noel Marianne (CNRS, LISIS) Revelin Florence (CNRS, LESC) Levain Alix (CNRS, AMURE) PARDOQ research group (AMURE) Noûs Camille (Cogitamus)

The STS literature has shown the diversity of openness practices; but little is known about how the HSS research communities are empirically dealing with the contemporary open data movement (ODM) in the "age of open science". In the context of the increasing digitization of practices and results, this movement, now transposed in European political agenda, has an impact on the very core of research activities and its support. Faced with new requirements of funding agencies, a growing number of studies from French academic institutions focus on data management at the laboratory and university levels, most often to support internal policies aiming at implementing data management tools. But how are qualitative research practitioners affected by the ODM? How do they perceive the injunctions and norms in favor of open data, and integrate openness in their research practices? What shifts does it bring about?

The communication aims to present the empirical results of the PARDOQ project, which is the first qualitative survey conducted in France on the practices and representations of data sharing and data protection within research communities practicing or accompanying the collection of ethnographic materials. The method used

relies on 19 semi-directed interviews with members of research support networks and with practitioners achieved in fall 2020, completed with a critical discourse analysis and participant observation.

Results emphasize a considerable gap between ethnographers' practices and institutional expectations, both in terms of openness and compliance with the laws in force (security, GDPR). For those interviewed, the institutionalization of ODM is part of a broader context of scarcity and concentration of resources, and loses legitimacy because of the absence of sustainability of the latter. Sharing practices are logically built outside the ODM framework. Our research thus suggests that ethnography is a limit case that allows us to understand the limits of the ODM.

Room N114 - Closed Panel 15. Algorithmic regimes: interactions, politics, and methods

Yana Boeva (University of Stuttgart)
Juliane Jarke (University of Bremen)
Simon Egbert (University of Bielefeld)
Maike Arnold (High Performance Computing Center Stuttgart) Algorithmic Regimes Editorial Team (n/a)

This panel investigates the interactions, politics, and methods of algorithmic regimes in different social domains and across different socio-technical arenas. Algorithmic regimes are defined by new modes of knowledge production and dissemination due to the increasing relevance and diffusion of machine-learning (ML)-based "algorithmic systems" (Seaver, 2019) in academia and beyond. Algorithmic regimes transform the epistemological, methodological, and political foundations of knowledge production, circulation, communication, and decision-making in contemporary societies. Applications are as diverse as algorithmic decision-making systems that decide upon the eligibility for social welfare, artificially intelligent speech analysis that (pre)select job applicants for human resources, or so-called data science methods upon which a whole new domain within the academic field is being institutionalised.

Currently, we can observe computationally driven techniques and modes of knowledge production being adapted in different areas of society, leading to an "epistemic colonization" (see Gillespie, 2014; also Kitchin, 2014a; Beer, 2018). In this sense, algorithmic regimes do not so much refer to technology-induced changes of science and scientific knowledge production, but to a wider and more fundamental shift in society's "regime of truth" (Foucault, 1976; Deleuze, 1992), i.e., in the structures, cultures, and practices that regulate how (valid) knowledge is produced and by which means truth claims can (successfully) be made. These shifts give rise to new "knowledge regime(s)", potentially encompassing all areas of society, and that we shall study as algorithmic regimes. In order to examine algorithmic regimes, we need to consider at least three different perspectives: (1) the ways in which algorithmic regimes reconfigure (social) interactions; (2) the politics engrained in algorithmic regimes; and (3) the methods to research and design algorithmic regimes.

Session 1

218 THE FUTURE(S) OF ALGORITHMIC REGIMES: ARE WE HEADING TOWARDS A 'PREDICTIVE SOCIETY'?

Simon Egbert (University of Bielefeld)

Attempts to generate knowledge about the future and to make it usable for decisions in the present have existed for a long time in human history. Whether it is ancient practices of divination by consulting prophets or using oracles or medieval efforts to foresee future events by asking witches and other soothsayers: the future has always been an important point of reference for human action (Adam, 2004). Modern societies, however, beginning with industrialisation, are characterised by a particularly close relationship to the future and use numerous possibilities of (scientific) foreknowledge production to colonise it (Adam & Groves, 2007). Nevertheless, with recent advances in machine learning fuelled by predictive analytics, approaches to predicting the future to optimise strategies and actions in the present are becoming even more important (Esposito, 2021). This sometimes culminates in the assumption that we will soon live in a "predictive society" (Davenport, 2016, p. xix). Although this societal diagnosis may appear as exaggerated (over-)generalisation, it is not to be denied that predictive methods have a significant impact in contemporary society – and indeed will have an even greater impact in the future. Already now, they are a decisive factor when it comes to decision-making, evaluation processes or classification practices in as many as diverse social fields – like in policing (Kaufmann, Egbert, & Leese, 2019), credit scoring (Hurley & Adebayo, 2016), climate modelling (Aykut, 2019), nursing (Carroll, 2019) and e-commerce (Jannach et al., 2010). Before this backdrop, in my contribution I will analyse machine learning-based predictive analytics as 'algorithmic regimes', with special attention to the political decisions behind these algorithms in terms of inclusion and exclusion, as well as the discriminatory implications of their application. Finally, using sociological literature on societal diagnoses, I will discuss the analytical tensions arising when speaking of a 'predictive society'.

217 THE POLITICS OF DATA SCIENCE: INSTITUTIONALISING ALGORITHMIC REGIMES OF KNOWLEDGE PRODUCTION IN ACADEMIA

Stefanie Raible (Johannes Kepler University Linz) Bianca Prietl (Johannes Kepler University Linz)

This paper focuses on the rise of Data Science within academia, in order to study the institutionalisation of a new regime of knowledge production that is based on algorithmic big data analysis (also: Beer 2019; Bonde Thylstrup et al. 2019; Kitchin 2014). Following Foucault's (1978) concept of power/knowledge, we take questions of epistemology as inextricably linked to questions of power (also: D'Ignazio/Klein 2020; Prietl 2019), and hence, ask how Data Science are structurally implemented, epistemologically positioned, and discursively legitimised in the course of the ongoing process of their institutionalisation within academia. Based on an empirical research project that studies the establishment of academic Data Science in German-speaking countries, i.e. Austria, Germany, and Switzerland, we depict some key features of this development that is crucial for understanding the power dynamics incorporated within the larger shifts in society's regime of truth: Structurally Data Science chairs as well as study programs become primarily implemented within STEM departments, and scholars as well as students are mainly recruited from computer science, rendering data analysis an object of computer science. Epistemologically Data Science are presented as an "analytical tool-kit" that allows for analysing data in (almost) every so-called 'domain'. Thus, Data Science claim to offer a universal approach to knowledge production, and decision- making. Important modes of legitimising Data Science are i.a. the postulation of a given and unchangeable datafication and digitalisation of society enabled by a technological state of the art that must be utilised for science's and society's sake. Thereby, Data Science are positioned as offering a key to more information, better decision, as well as innovation in various academic and non-academic fields (e.g. medicine or private corporations).

219 MAKING ALGORITHMS FAIR

Katharina Kinder-Kurlanda (Digital Age Research Center (D!ARC), University of Klagenfurt) Miriam Fahimi (Digital Age Research Center (D!ARC), University of Klagenfurt)

This presentation considers the making of algorithmic fairness as an undertaking that involves various viewpoints and interests. We draw on our experiences in the international, interdisciplinary project "NoBIAS – Artificial Intelligence without Bias" and on interviews with machine learning (ML) practitioners. We explore how a shared vision of fairness, trust and accountability as a design paradigm for ML-based decision making systems is conceptualised by the various contributing scholars, ML practitioners and domain experts. These actors work with different assumptions about how to identify, understand and address algorithmic biases at various points, not least based on their underlying academic field – from decisions about data used for ML, attributes of the data itself, an algorithm's specific working, to counterfactuals explaining an algorithm's decisions post-hoc. Different assumptions about how to study and understand bias and fairness are thus linked to, first, different (disciplinary, interdisciplinary) epistemic practices. They also, second, go along with different understandings about one's own role in producing knowledge, in making and doing (Downey & Zuiderent-Jerak 2016) research and/or algorithmic system design. And third, assumptions about how to explore bias in ML driven algorithms also pertain to how and which audiences are imagined, to different views about how to relate to those who are ‚subjected' to algorithmic decision making and may require (what) different acts of making research transparent and open. Those taking part may need to engage with audiences that might be regarded as inconvenient just as much as with invited ones (Pearce & Nerlich 2018). We show how the project to design an algorithmic system that responds to requirements concerning trust, fairness, and accountability, activates different epistemic practices and methods of imagining and making fair, trustworthy AI. Our results contribute an understanding of fairness in AI as a contingent, contested undertaking.

221 UPON OPENING THE BLACK BOX OF MACHINE LEARNING AND FINDING IT LEADING DOWN THE PATH OF LEAST RESISTANCE

Hendrik Heuer (University of Bremen) Juliane Jarke (University of Bremen)

In STS, there is a long tradition of researching the emergence and shaping of socio-technical innovation. Terms like inscription (Akrich 1992; Latour 1990) and configuration (Suchman 2012; Woolgar 1990) have been important ideas for examining human-machine relations and opening the black-box of technology design (Winner 1980). We review these important concepts and discuss to what extent they help us in examining machine learning-based systems. Unlike other software explicitly programmed in formal languages, machine learning (ML) is a novel paradigm where rules are inferred from data. We argue that this new paradigm requires new approaches for critical inquiry.

We propose a concept of ML-based systems that differentiates between a heterogeneous set of sociomaterial actors such as various types of data, different ML-algorithms, resulting inferred models, as well as ML practitioners, data providers, and users (and their beliefs, practices, and dispositions), in addition to infrastructures, organisational aims and societal imaginaries about AI-featured innovation.

We demonstrate how this concept can be used to critically examine ML-based systems through a review of contemporary and controversial ML applications. These examples include ML-based systems that are allegedly able to detect sexual orientation or delinquency by a person's face. We also examine biased ML-based systems trained to predict whether somebody qualifies for a job, additional job training, or parole. We explain why these

misapplications of machine learning are prototypes of a new class of errors that cannot easily be explained through inscription or configuration. By opening the black box of ML-based systems (e.g. Burrell 2016; Mackenzie 2017), we extend on state-of-the-art ML-research (Goodfellow et al. 2018; Geirhos et al. 2020), who found that such systems (can) follow a “path of least resistance” by leveraging imperceptible anomalies in data. We make methodological proposals on how the agency and power of the different actors should be studied in context.

Room N113 - Closed Panel 20. EMERGENT FUTURES BEYOND THE PLANETARY: SOCIETY, SCIENCE AND TECHNOLOGY AND THE MAKING OF OUTER SPACE

Matjaz Vidmar (The University of Edinburgh)
Hanna Nieber (Max Planck Institute for Social Anthropology)
Alessandra Marino (The Open University)
Nina Klimburg-Witjes (University of Vienna)

Outer Space has often been mentioned as the "final frontier" of technoscientific development. Having pushed our home planet into a drastic environmental crisis of climate change and growing (un)sustainability of natural resources, humans are yet again looking to Outer Space frontiers for solutions to our increasing challenges. From billionaire entrepreneurs' dreams of multi-planetary escapism to an ecology of satellite data systems monitoring the declining health of forests, seas, and everything in between, the future(s) of human habitat are being made with reference to our relationship with "the other" - Outer Space.

The work of the Social Studies of Outer Space network (https://ssosnetwork.org/) covers a wide area of inquiry, both theoretical and empirical (Alvarez, et. al. 2019). Some of our recent interest lays in the intersection of socio-political imaginaries (Tutton, 2021), the (geo)politics of space institutions (Klimburg-Witjes, 2021), the socio-economic politics of space exploitation (Jones, 2021), anthropological studies of infrastructure (Taylor, 2020), the organisational dynamics of the (New) Space industry (Vidmar, et. al. 2020), and more.

The papers in this section will explore the development of visions and imaginaries as a way to engage professional and public audiences in future-making in Outer Space. We deploy a varied methodology of historiographical, archaeological, ethnographic and anthropological to study the inception of technological narratives, their evolution(s), and the impact they have on systems of thought, economic and social relationships, and material culture. Through analysing political discourse as well as stakeholder experiences, we illuminate the processes of making future(s) relatable and manageable as our social sphere increasingly expands to include the “heavens”.

Session 1

492 MAKING THE ARIANE ROCKET: SOCIOTECHNICAL IMAGINARIES OF EUROPE IN SPACE

Nina Klimburg-Witjes (University of Vienna)

When we think about practices of European integration, we rarely think about how they may extend to outer space. Yet, a new global space race is in full swing, in which commercial and government actors worldwide are putting forward bold visions of human futures in outer space. Europe is at the cusp of deciding which role to play in this new space age, with the collaborative European rocket program Ariane being at the centre of most debates about the future of Europe in space. While Ariane was heralded as a symbol of European integration since its first launch in 1979, the rise of commercial companies like SpaceX continually spurs controversies in the European space sector about the need to maintain such an expensive large-scale infrastructure and its contribution to so-called European autonomy. Building on ethnographic fieldwork in the European space sector, I explore which kind of space futures are projected onto and realized through Ariane, and how these futures relate to ideals and tensions of European integration. Through mobilizing work in STS on sociotechnical imaginaries and insights from the social study of outer space (SSOS), my paper contributes to our understanding of how the politics of the present are shaped by how the future of space is envisioned and vice versa.

494 ANTICIPATING THE COPERNICAN EXCHANGE

Peter Timko (Jagiellonian University)

In 1972, the same year that NASA concluded its Apollo program, the historian Alfred Crosby introduced the concept of the Columbian Exchange to describe the dramatic redistribution of microbial, animal, and plant life in the wake of European contact with the Americas. This dynamic transaction, along with the concurrent and often violent exchange of non-living commodities and ideologies, had far-ranging social, political, ecological repercussions. Today, as astronautic activity blurs the borders of the terrestrial and celestial, the world may be poised to undergo a similar process between the “old world” of Earth and a spacefaring future world above—what I call the Copernican Exchange.

While the boundary between Earth and space has always been porous, a renewed emphasis on space, especially the rise of private space enterprises or New Space, stands to intensify and accelerate this interrelation (Vernile 2018). Specifically, a growing number of New Space actors, such as StarLab Oasis, are developing biotechnologies to expand earthly agriculture into space (Wheeler, 2017; Lewandowski & Stryjska, 2021), and

importantly, using astrobiological techniques to breed novel forms of life to bring back to Earth (Janjic 2019). While this industry remains embryonic, anticipation of a full-fledged space economy and robust Copernican Exchange in the future nonetheless animates activity in the present (Gregg, 2021). Using this metaphor as a starting point, I examine the socio-technical imaginaries various actors involved with this industry use to understand and prepare for this future (Jasanoff & Kim 2016). Questioning how space agriculturalists, their investors, and political patrons envision the temporal, material, and economic aspects of this exchange creates a valuable window into the several issues lurking at the intersection of New Space and food production—issues such as planetary biosecurity (Profitiliotis & Loizidou 2018), financialization (Fairbairn 2020), nationalists projects (Grove 2021), and the future of multispecies space expansion (Rahder 2019).

495 THE FUTURE OF SPACE HABITATS: THE ARCHAEOLOGICAL VIEW

Justin St P Walsh (Chapman University)

The International Space Station is effectively the first permanent human space habitat, having been continuously occupied by at least two people since November 2000. Current plans project its use through 2030. More than 250 individuals – close to 42% of all people who have ever been to space – from 19 countries have visited ISS so far. At the same time, there are at least five successor space stations now in various stages of design and construction, from the multi-agency Lunar Gateway, to commercial ventures by different consortia, all supported by $100+ million contracts from NASA. This situation calls for clear information about how humans live for long periods in space. How is life organized, who occupies what spaces, and how do people relate to the material culture that surrounds them – adapting themselves to it, or adapting it to their needs and desires? Without understanding these key issues, any mistakes that have been made are likely to be replicated or even intensified.

497 THE GEOPOLITICAL IMAGINATION IN OUTER SPACE

William Stewart (University College London)

This paper explores the role of 'outer space' technology and infrastructure and the geopolitical imagination in diplomatic relations. Terrestrial tensions and the increasing discourse of the militarisation of outer space have challenged the role of outer space as a cooperative and peaceful domain (see relations between Russia and the West and anxieties in Ukraine). Historically, outer space, and the International Space Station specifically, have been one of the main areas of cooperation and collaboration between otherwise acrimonious factions. Beginning with the International Geophysical Year 1957-58, cooperation is embedded in humanity's engagement with outer space and remains a focal point from which peaceful relations can emerge. Further, the difficulty and cost of escaping Earth's gravity well as well as the extreme environment of outer space demand cooperation and collaboration. Drawing on actor-network theory and international relations (Barry 2013) and 'more-than-human diplomacy' (Dittmer 2016), I argue the geopolitical imagination of outer space is a double-edged sword that can be used to cause alarm (a 'missile gap' in outer space) or bring humanity together to explore the cosmos,

500 (RE)MAKING SPACE FOR THE UK: NATIONAL IMAGINARIES OF SPACE ECONOMY FUTURES

Eleanor S Armstrong (Stockholm University) Richard Tutton (University of York)

While the UK’s original space programme is seventy years old, recently we have witnessed a renewed level of interest and investment in Britain’s place in outer space. With the launch of the first ever National Space Strategy, the Prime Minister has advanced a vision of “Global Britain becoming Galactic Britain”. This kind of political rhetoric attests to the significance of this intervention for Britain’s new position outside of the EU, with a mix of militarism and economic considerations to generate inward investment with the promise of ‘levelling up’ different areas of the country. A crucial part of the new British space vision is the establishment and licensing of spaceports from which space companies will launch payloads into orbit from the UK and potentially some of its other overseas dependencies or territories. The development of commercial spaceports have a long and varied history in different national contexts. In the UK, spaceport projects in what Laura Watts (2019) calls ‘edge landscapes’ such as Shetland, Cornwall and Wales vie for support from local, national and international actors. These projects are part of extant networks of NewSpace - the private space flight industry - which has a global reach. While locally distinct, these NewSpace activities remake the historic imaginaries that underpinned a nationalist-driven space sector work; supplementing Cold War era motivations with privateering, economic imaginaries propagated (largely) by wealthy white men of the Global North. Our paper examines how national sociotechnical imaginaries animate this vision within the UK and the way they yoke together other international NewSpace imaginaries with developing narratives of nationhood post-Brexit. In doing so, our paper makes a contribution to our understanding of the politics of technoscientific futures.

Room N107 - CLOSED PANEL 21. VIRTUAL PRESENCE: THE DIALECTICS OF LONELINESS AND TECHNOLOGY

Gemma Hughes (University of Oxford)
Lars Johannessen (Oslo Metropolitan University)
Erik Børve Rasmussen (Oslo Metropolitan University)

Loneliness is emerging as a significant challenge in contemporary society. Virtual Presence is an interdisciplinary collaboration to undertake a cultural analysis of how loneliness is perceived and represented in relation to the emerging phenomenon of loneliness technologies.

Understanding loneliness as a complex interplay of culture and personal choices across social contexts is crucial to create adequate interventions related to this challenge. The majority of research on loneliness to date comes from the medical field, concerned with the health-related effects of being alone or isolated. We seek to expand this understanding of loneliness from our empirical research into the phenomenon as it is mediated by organisations, markets, technology and policy. Our aim is to develop new insights and intellectual tools that will allow us to contribute to, and critically appraise, the development of new possibilities for future forms of connectedness.
This panel brings together our developing insights from empirical and theoretical work on the emergence of telepresence technologies in Norway and the UK. We focus on the dialectics of loneliness and technology and how these frame the problem of loneliness in the context of different welfare systems, and how the technologies used to address loneliness are understood. Our research includes a novel collaboration with a start-up tech company, No Isolation, who are dedicated to tackling the problem of loneliness through 'warm' technology. This collaboration gives us insight into how different actors engage with the technology as well as offering us opportunity to shape and enhance technology design and use.

The panel includes two sub-themes of concepts of presence, and loneliness technologies-in-use. In considering, and troubling, concepts of presence, we have a group of papers that draw on social psychology, the philosophical works of Heidegger and Derrida and practice theory. These papers form a dialogue about the nature of presence, re-visiting categories of presence through the lens of telepresence technologies and thus re-formulating the hierarchies of physical and virtual presence. A second group of papers analyses loneliness technologies-in-use, considering how these technologies are used and constituted in institutional and homely settings. Authors draw variously on STS and feminist scholars to consider how these technologies are understood to 'work', how lonely subjects are produced through discourses of ageing and technology and to analyse how ageing and dying are experienced and mediated through social contact.

Our aim in this panel is to connect our work with that of other scholars concerned with the question of human connectedness. We seek to stimulate conversations about the extent to which the construction of the problem of loneliness offers continuity or change in relation to our ideas of presence, against the backdrop of the destabilising forces of the pandemic. We are also concerned with understanding how inequalities of access to technology shape social relations, and how the political economy of loneliness technologies shapes our understanding of these relations. Our over-arching aim is to develop a novel theorisation of presence as distributed, as well as mediated, by technology and social networks.

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339 REAPPRAISING THE SOCIAL: NOTES TOWARDS A MORE INCLUSIVE UNDERSTANDING OF LONELINESS AND TECHNOLOGY

Lars E.F. Johannessen (Oslo Metropolitan University)

In the classic definition by Perlman and Peplau, loneliness refers to the unpleasant experience that occurs when a person's network of social relations is deficient in some important way, either quantitatively or qualitatively. The 'network of social relations' referred to in this definition is usually assumed to involve direct relations with other people. However, research spanning everything from anthropology to human-computer interaction shows that people can form meaningful relations with a wide range of 'non-traditional' actors, including technology-mediated relations with computers, chatbots, fictional characters, media personalities, and social robots. It is not uncommon, for instance, for people to become deeply saddened by the death of a loved character in a book or movie, or to form a strong 'parasocial' connection to celebrities that they have only seen through media (so strong, in fact, that they might greet them as old friends if they were to encounter them in person). This raises the question: What are the relationships between these technology-mediated relations and loneliness?

This article calls for research on loneliness and technology to take 'non-traditional' relationships seriously. Specifically, the article does three things. Firstly, I provide a broad overview of the ways in which technologies have been and are being used to form social bonds, using examples from research on parasocial relationships, sociomental bonds, and non-human interaction. Secondly, I discuss some crucial issues that determine how

people experience non-traditional bonds, with a particular focus on how these experiences vary with norms for legitimate and authentic sociality. Thirdly, I discuss the theoretical and practical implications of this broadened conception of sociality, suggesting how it might shift the direction of both research and policy on loneliness and technology.

340 RE-ENTERING PLATO'S CAVE – ON PRESENCE AND HIERARCHIES OF REALITY IN DIGITAL TELETECHNOLOGIES

Clemet Askheim (Oslo Metropolitan University)

The development and spread of technologies that digitally mediate presence constitutes a novel situation that actualize one of the oldest problems in philosophy, namely the problem of presence. This problem has been diagnosed as a western metaphysics of presence by Heidegger and Derrida, and analyzed and criticized as nihilism and logocentrism.

The philosophical tradition since Plato and Aristotle separated subject from object and reason from mythology, privileging one over the other. For Heidegger this represents the beginning of a specific understanding of Being as presence, while Derrida extended the analysis to language, signs and writing, questioning the tendency to privilege speech and presence over writing and absence. For both Heidegger and Derrida this privileging of presence and the present entails a hierarchy of reality that has kept our thinking captive, since Plato freed it from the cave of mimesis.

Neither Heidegger nor Derrida had teletechnologies in mind when they analysed how we tend to privilege presence in our thinking, but were more concerned with the philosophical tradition. Yet, by confronting their analysis with the digital revolution in telepresence-technologies, it becomes possible to both understand something new about digitally mediated presence, and to update Heidegger and Derrida's analysis.
Through analysis of some illustrative examples, like Zoom, we want to reformulate the critique of hierarchies of reality and authenticity first developed by Heidegger and Derrida. These technological developments challenge the binary understanding of presence in Heidegger and Derrida, as something either-or. Instead, telepresence offers us the possibility of thinking about presence in degrees or as a continuum, and as being potentially multiple, occurring in several places simultaneously. Our aim with this paper, then, is to actualize the analysis of the metaphysics of presence to be better equipped to understand mediated presence in our digital societies.

342 STSTREAMING TECHNOLOGIES AND THE LAW: PROBLEMATIZING THE DISTINCTION BETWEEN ANALOGUE AND DIGITAL CO-PRESENCE IN EUROPEAN DATA PROTECTION REGULATION

Julia Köhler-Olsen (Oslo Metropolitan University)

This paper problematizes the legal distinction between analogue and digital co-presence in the legal regulation of streaming technologies. During streaming, users meet in a shared digital space represented on their screens. Yet users also find themselves in physically disparate spaces, either private or public, from which audio-visual information is transferred. Due to this information transfer, it is generally agreed that streaming invokes data protection regulation, whereas meeting someone in a shared physical space does not. This holds true even in cases where the streamed content is not recorded (i.e., transient).

Our aim with this article is to trouble the legal distinction between physical and virtual co-presence. Focusing on European data protection regulation, we ask: what is the important difference between seeing each other face to face on screen vs. in person, with regards to our rights to privacy and informational self-determination? Why should it be a privacy issue that our interaction is mediated digitally, and why is the information we share less private and sensitive when mediation is analogue?

Our analysis explores the historical, institutional, and metaphysical underpinnings of legal constructions of streaming technology and the distinction between analogue and digital interaction. We show that the boundary between free and regulated interaction is arbitrary and relies on problematic understandings of both digital and analogue spaces as sites of human co-presence. Our goal is not the removal of regulations but the improved understanding of important intersections between technology and the law, which, we argue, is a underexplored yet potentially seminal topic of research in STS. Our study thus paves the way for further inquiry into legal constructions of communication technology in general, and of virtual presence technologies and digitally mediated human interaction in particular.

343 DISTRIBUTED PRESENCE: MULTIPLE THEORIES OF VIRTUAL PRESENCE

Gemma Hughes (University of Oxford)

The assumption that being present with or for someone relies on physical co-presence quickly falls away when we consider how emotionally connected we can feel to people far away, or indeed how distant we might be from people in close proximity. Material artefacts (letters, jewellery, photographs) and technologies (digital and analogue) create and enhance human connections and feelings of presence. The question of what presence is therefore concerns us in everyday life, as we increasingly participate in social activities (work, school, play) when we are physically absent yet virtually present.

In this paper, I seek to develop a new understanding of presence that accounts for the multiple ways in which presence is experienced, performed and constructed through technologies. Our study of telepresence technologies designed to address loneliness and social isolation has led us to ask: how is presence constituted by these technologies, and what kind of presence is offered? Designed purposefully as a social good to combat loneliness and social isolation, the telepresence technologies AV1 and KOMP are used to compensate for children's absence from school and the absence of family members in the lives of older people.

We draw on multiple ontologies to trace how a child's absence from school becomes tele or virtual -presence. We find that the use of telepresence technologies involves a negotiation of sociomaterial arrangements. Institutional rules are re-shuffled to allow the technology to be introduced to and materially connected in the classroom. Once there, the technology mediates the student's participation in classroom interactions. Yet for that student to be marked 'present', a new category must be produced in the school's attendance register. Being present is both discursively linked with the educational notion of attendance and is performed by the student. Presence, we suggest, can be simultaneously socially constructed, discursively produced and, materially arranged.

Room N108 - Closed Panel 23. REINVENTING THE POLITICS OF KNOWLEDGE PROCTION IN MIGRATION RESEARCH

Nina Amelung (University of Lisbon)
Stephan Scheel (University of Duisburg-Essen)
Rogier van Reekum (Erasmus University Rotterdam)

The contributions to this panel investigate the practices, epistemic registers and politico-economic conditions of knowledge production in migration research and governance. They mobilise insights, concepts and approaches from STS to highlight the power effects and the irreducibly political nature of knowledge production on migration. Drawing on the insight that 'matter and meaning are not separate elements' (Barad 2007: 3) and that it is, consequently, impossible to separate questions of epistemology from questions of ontology (Kruse 2010), each paper studies particular practices, infrastructures and technologies that enact migration, as well as particular categories of people on the move, as intelligible, knowable objects of government. In this way, the papers highlight the onto-political effects of particular socio-technical configurations facilitating the production of knowledge, but also various types of non-knowledge, about migration.

To this end, the papers engage with the politics of knowledge production in migration research from two angles. One set of papers (Meisner and Taylor; Schäfer; Peano) attends to the enactment of migration as an intelligible object of government, starting from the observation that migration is an abstraction that cannot be known or negotiated in processes of policy deliberation 'independently of the concepts, definitions, methods, statistics, visualizations and various other data practices that are mobilized to produce knowledge on migration for the purposes of its "management"' (Scheel et. al. 2019: 579). Attending to the question through what kind of methods migration is enacted is of particular relevance at a time when digital technologies are transforming the landscape of knowledge production (Dijstelbloem 2017; Stielike 2022; Taylor and Meissner 2021). A second set of papers (Amelung and Ferreira; Netz; Pollozek; Scheel); starts from the observation that practices of border and migration management have increasingly become knowledge practices. This tendency is, for example, illustrated by the growing importance of age and credibility assessments in asylum procedures or the production of country of origin information by specialised agencies to assess asylum claims. Conversely, also the contestation of border control has become a question of knowledge production, as illustrated by efforts of critical NGOs and activists to monitor and document states' practices of border and migration management and their potential failures and violations of human rights with the help of forensic evidence and human rights reporting systems. Taken together, the papers demonstrate (1) that it is imperative to make knowledge production an integral element of the research agenda and object of study of migration studies and (2) that STS offers scholars a rich repertoire of concepts, approaches and analytical sensitivities to engage in this task.

At the same time, the contributions to this panel advance debates in STS by putting to work and test established concepts and approaches of STS outside of the typical clinical lab settings of knowledge production in contexts that are characterised by asymmetrical power relations featuring the threat (and use) of violence, epistemic injustices, the continued repercussions of colonial histories and highly contested policy arenas in which the invocation of 'crisis' is a routinized strategy of government.

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439 PASSING THE TEST. TURNING UNKNOWNS INTO PROCESSABLE SUBJECTS AT THE REGISTRATION AND IDENTIFICATION CENTER IN MORIA

Silvan Pollozek (European University Viadrina, Frankfurt Oder) Jan-Hendrik Passoth (European University Viadrina, Frankfurt Oder)

This paper works out various testing strategies of migration and border control that turn unknown people into processable subjects. Based on ethnographic work on the screening procedure at the Registration and Identification Center in Moria, the paper unpacks the practices and processes of 'truth assessment' conducted by Frontex border guards. Drawing on vocabulary of actor-network theory and ethnomethodology, the paper shows how the processing of unknowns is organised through several testing situations people have to pass. It analyses the questionnaires, classification sets and manuals Frontex officers mobilise and details out how an asymmetrical situation of interrogation is produced by attributing different roles, coding statements in terms of 'right' or 'wrong', and sensing people's impression management in terms of 'authentic' or 'fake'. Moreover, the paper examines in detail how such interactions are translated into a standardised, unambiguous and processable data identity in the end and critically analyses border guards' strategies of ignoring and absorbing objections and contestations. Finally, the paper formulates a more general critique about the asymmetrical design of such identification arrangements and discusses several entry points for contestation.

441 HOW TO RESEARCH MIGRATION USING DATA TECHNOLOGIES? RE-VISIBILIZING MIGRATION INFORMATION INFRASTRUCTURES

Fran Meissner (University of Twente) Lynnet Taylor (Tilborg University)

Informational capitalism and the availability of commercially generated data on human mobility transform migration research and policymaking. Big tech infrastructures are increasingly part of migration data-generation and analysis, limiting analytical narratives to framing migration as risk. This poses serious questions about how migration researchers interested in informing, rather than following, policy should orient their work. We ask two questions. Can an ethics- and responsibility-based approach to doing migration research with new data sources be found? And if ethics is not a sufficient answer, what might be done as well, or instead? To answer those questions we first identify some of the risks that accompany the new data sources and related analytical methods. We then draw on experiences with 'data ethics' in the corporate sector to explain why getting the data right through emphasizing ethics is not sufficient to prevent undesirable outcomes. Instead, we debate how getting the data and methods right crucially depends on the relationship between research and infrastructures by exploring and substantiating the notion of migration information infrastructures and arguing for their re-visibilizing. We conclude that re-imagining migration information infrastructures is a fruitful way forward for migration research in times of new data technologies.

443 ENDING OR MAINTAINING A BORDER CONTROL AGENCY? ON THE SOCIO-MATERIAL AND EPISTEMIC PRACTICES OF HOLDING A STATE ACCOUNTABLE FOR ITS HUMAN RIGHTS VIOLATIONS

Nina Amelung (University of Lisbon) Susana Ferreira (Nebrija University)

On March 13 2020 the Ukrainian citizen Ihor Homenyuk was tortured and murdered by border police officers working for the Portuguese border control agency SEF at the detention installation of the Lisbon airport. The case led to criminal investigation, and paved the way for the political decision of the government to abolish the border control agency in its current form. The latest decision however is to extend the mandate of the agency for another six months. In this paper, we explore the different epistemic practices carried out to claim legal and political accountability for human rights violations under the responsibility of the Portuguese state. First, we focus on the socio-material and epistemic practices to produce forensic evidence and the judicial claims presented at court against the offenders. Second, we analyze the reporting and documentation system on state's human rights compliance/violation of national/international organizations. Third, we take a look into the legacies of a border control agency which evolved over time as an organization cultivating specific epistemic cultures of secrecy and intransparency, and an organizational paradigm of a police force being foremost accountable to rationalities of internal security. We compare the different socio-material and epistemic practices and discuss how attempts of holding a state accountable gain under specific conditions momentum, but relatively easily can lose political authority for the sake of maintaining border security.

Room N110 - Closed panel 24. RESPONSIBLE FUTURE-MAKING PRACTICES: OPPORTUNITIES, TENSIONS AND POSSIBILITIES

Hannot Rodríguez (University of the Basque Country UPV/EHU)
Sergio Urueña (Norwegian University of Science and Technology, and University of the Basque Country UPV/EHU)
Mario Pansera (University of Vigo)

Research and innovation initiatives and practices are strongly influenced by the envisioning and mobilization of socio-technical futures. The epistemological and political governance of science and technology is de facto grounded in the expectations, sociotechnical imaginaries and technovisions that constitutively permeate the dynamics of progress. This performative-transformative character and potential of futures has been highlighted by certain science and technology scholars and frameworks. Nowadays, the future is explicitly conceived as an object of responsibility.

For instance, European Union research and development policies have been increasingly permeated by the call for the development of more responsible research and innovation Initiatives such as "Responsible Research and Innovation" (RRI) or "Open Science", where research and innovation dynamics are approached as radically open and debatable, even concerning the expectations and preferences guiding them. Responsibility here is thus conceived in explicit anticipatory terms, that is to say, in terms of collectively taking care in the present of socio-technical futures.

There are, however, important difficulties and resistances linked to operationalizing this more socio-politically robust principle of responsibility in the context of institutional research and innovation systems. Ultimately, attempts to politicize the dynamics of futures constructions must confront a reality where the prevailing way of approaching the future is strongly committed to techno-industrial progress and economic growth. Therefore, the disruptive power of anticipation should not be taken for granted but analyzed and approached having always in mind the actual frames, regulations, commitments and feelings orienting and constraining (i.e., reifying, or closing-down) the processes, outcomes and ends of research and innovation practices.

This session aims to explore the theoretical and practical possibilities and tensions of developing interventive, anticipatory resources that are capable of instrumentalizing the future in more open, inclusive and reflexive ways (i.e., capable of facing reification inertias of the dominant futures and the research and innovation policies and practices associated to them). In this sense, the following questions seem worth considering: Are anticipatory narratives and practices within research and innovation policy systems really open, inclusive and reflexive? If so, to what extent? How do socio-technical expectations, imaginaries and technovisions of the future constrain/enable research and innovation practices? To what extent are anticipatory methods (e.g., scenario-building, science-fiction prototyping, technology roadmapping, etc.) capable of de-reifying scientific-technological dynamics and inertias? How is the epistemic-political quality of open anticipatory practices enacted and/or assessed? How should it be? What is the role and relevance of anticipatory governance within policy frameworks such as RRI or "Open Science"?

Session 1

576 RRI AND OPEN SCIENCE IN THE FACE OF PREVAILING EU FUTURE NARRATIVES: AMBIVALENCES AND RESISTANCES

Hannot Rodríguez (University of the Basque Country UPV/EHU), Sergio Urueña (Norwegian University of Science and Technology, and University of the Basque Country UPV/EHU)

Initiatives and discourses on responsible research and innovation increasingly permeate EU research and development policies. For example, proposals such as “Responsible Research and Innovation” (RRI) and “Open Science” are claimed to radically open up innovation dynamics, including the underlying preferences and expectations that shape them.
Responsibility here seems to be characterized in anticipatory terms, i.e., in terms of collectively taking care of the futures enabled by research and innovation practices in the present. This implies emphasizing the politicization of how futures are constructed through innovation and the goals towards which those innovations are oriented.
However, this emphasis on politicizing research and innovation practices by opening up their potential futures should be understood within a context where, as this paper will show, the prevailing way of approaching the future is strongly committed to an imperative of technological progress and economic growth. RRI and Open Science can potentially deploy valuable responsibilization heuristics in their efforts to open up the potential futures of innovation anticipatorily. Nevertheless, it is important to note that these heuristics’ degree of disruptiveness (or openness) will depend on how their engagements with futures deal with this techno-economic commitment, or imperative, characteristic of research and innovation systems such as EU’s.
The scope and heuristic meaning of RRI and Open Science in relation to the EU’s innovation system must thus be elucidated and evidenced by a thorough analysis of the prevailing future narratives that articulate European

science and technology policies. The present paper precisely presents a preliminary analysis of how the future is mobilized and framed in the key narratives underlying current European research policies.

577 FRAMING ANTICIPATION IN A POST-GROWTH INNOVATION ERA

Mario Pansera (University of Vigo)

The feasibility and desirability of endless economic growth is increasingly being questioned by scholars and activists. While envisioning alternative economic models is key to ensure the sustainability and wellbeing of present and future generations, few studies have analysed what the role of 'innovation' might be in a post-growth era. Innovating has become imperative to the survival and expansion of any form of organisation. But this 'innovate or die mania' underpins assumptions – such as technological determinism and productivism – that neglect the socially constructed character of technological development, its politics and its capacity to enable just and equitable societies but also dystopian technocratic futures. This contribution posits that untangling innovation from growth is key to imagining a post-growth era. If growth is going to be unsustainable, we need new narratives for innovation that would accordingly also have to change and increase the scope of the innovation concept itself, beyond technology, into cultural and institutional change, and indeed social life and social order. Reflexivity and Anticipation are crucial to enable post-growth science and technology imaginaries. We propose to reframe the Schumpeterian notion of Creative Destruction with convivial forms of innovation based on an ethics and practices of care. Convivial ways of framing technology imply caring about human, non-humans and artefacts, repairing, maintaining, reflecting about values and purposes and anticipating changes. Finally, we call for a better integration of STS studies, including Responsible innovation, with the emerging fields of post-growth and degrowth.

566 TRANSFORMATIVE VISION ASSESSMENT AS AN APPROACH FOR RESPONSIBLE FUTURE-MAKING

Andreas Lösch (Institute for Technology Assessment and Systems Analysis at Karlsruhe Institute of Technology (ITAS/KIT)) Christoph Schneider (Institute for Technology Assessment and Systems Analysis at Karlsruhe Institute of Technology (ITAS/KIT))

The emergence of new technologies is influenced in research, technology development and societal sectors by future visions, about what a technology could or should contribute to solutions of current societal challenges. They shape communications and decisions in the present and are constitutive elements in the future-making practices of innovation processes. The most dominant visions here are technology-driven and promise to change society by technological break-through innovations. In that sense they provide a limited space for future-oriented decision-making and reduce the complexity of present grand challenges. However, there is an urgent need to make responsible and sustainable futures, able to anticipate complex sociotechnical transformations.
To contribute to this goal we have developed the approach of "transformative vision assessment". This builds on work that analyses visions in socio-epistemic practices, in which the communication of the visions contributes to the re-ordering of knowledge and societal arrangements. This approach tries to intervene in the visionary discourses of researchers, practitioners and the public in order to change the focus on technological visions towards sociotechnical scenarios. This takes place through participatory scenario creation involving researchers and societal stakeholders and using the scenarios to reflect on multidimensional demands to develop a technology in society in a way that it could meet urgent societal and ecological challenges.
The talk will discuss this approach as a methodological innovation in responsible future-making practices on the bases of a vision assessment study which accompanies technoscientific research in a big German research cluster on scalable 3D printing (e.g. Schneider et al 2021). We will also discuss the possibilities and the limitations of the approach in relation to the scientific and societal contexts of its use.

565 OPERATIONALISING FUTURE-MAKING PRACTICES: FORESIGHT AND INCLUSIVENESS

Andoni Ibarra (University of the Basque Country UPV/EHU, and RWTH Aachen University) Stefan John (RWTH Aachen University) Stefan Böschen (RWTH Aachen University)

Operationalising future-making practices is a main element for a better understanding of inclusiveness as a dimension of a Ballung concept such as RRI (van de Poel 2021).
On the one hand, the possibility of mobilising the "reflexive capital" of societal actors in foresight exercises is the key to inclusiveness, which makes it possible to operationalise anticipatory governance, i.e. to mobilise "social desirability" and plausibility in the projection of the desired impacts or "right impacts" of developments in science and innovation (Karinen and Guston, 2010). On the other hand, inclusiveness is a key dimension for generating continuous and collective commitments in a dynamic of "science with and for society" (von Schomberg 2011).
This paper presents preliminary results of an operationalisation exercise of future-making practices conducted in the field of nanotechnology research on interfaces of Bio-NanoSystems. The aim of the exercise is to identify facilitating enablers and barriers to the effective inclusive empowerment of the network of societal actors interacting in a collaborative project of co-production of decisions and results.

The operationalisation carried out applies an instrument for inclusive reflexivity that allows different levels of inclusive relational quality to be established. It provides facilitating dimensions of deliberative dynamics during strategic multi-actor reflexivity processes, combining the analysis of the key dimensions of future-making with the inclusiveness profiles of societal actors.

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573 SAFETY AND SUSTAINABILITY BY DESIGN FROM THE NANOLAB: NPS SELECTION RULES FOR VALUE-BASED DESIGN

Eudald Casals (Wuyi University - School of Biotechnology and Health Sciences) Martí Busquets (Applied Nanoparticles SL) Ignasi Gispert (Applied Nanoparticles SL) Víctor Puntes (Vall d'Hebron Research Institute (VHIR); Institut Català de Nanociència i Nanotecnologia (ICN2), CSIC, The Barcelona Institute of Science and Technology (BIST); Institució Catalana de Recerca i Estudis Avançats (ICREA))

The development of new technological applications enabled by increasingly more complex nanostructures is continuously growing. Among the pool of newly proposed materials, synthetic nanoparticles (NPs) are being studied as alternative tools in different areas such as energy harvesting, diagnosis, therapy, and environmental remediation. Although such newly developed nanoparticles have achieved considerable success in research, their effective implementation is being delayed. A main aspect responsible for this delay is an incomplete understanding of their observed unintended biological effects.

In order to reverse such dynamics the NPs Selection Rules have been developed. Herein, the different sources of NP induced toxicity have been analyzed and discussed taking into account the NPs formulation, their evolution in biological media and the reactivity during their use. This analysis serve as to suggest a set of advice to develop proper design strategies in terms of NP composition, morphology, structure, and surface chemistry. In addition, this knowledge also contributes to establish some recommendations to avoid potential harm when producing or manipulating NPs and for their safe storage, distribution and end-of-life.

The NPs Selection Rules are meant to be the foundations of a new approach towards the understanding of NP safety and innovation: instead of avoiding risk caused by NPs -ex post revision where NPs are assessed in terms of hazard and exposure only-, the focus is anticipatorily placed on applying a set of Safety and Sustainability by Design (SSbD) engineering rules. The NPs Selection Rules can represent a privileged tool -from the laboratory floor- towards the full development of SSbD that represents a "values-based" as opposed to "science-based" approach to assessment, regulation and decision making, in which the objective is not just to avoid bad, but to actively pursue good, and specifically, the pursuit of sustainability objective (social, economic and environmental ones).

Saturday, 9th July

12:00-13:30

Room N1128 - Panel 035. THE FUTURE OF VACCINE TECHNO-POLITICS: OUTCOMES AND LESSONS OF THE COVID-19 PANDEMIC

Session 2

96 VACCINE DISRUPTIONS

Stuart Blume (The University of Amsterdam) Vesna Trifunovic (The Institute of Ethnography SASA)

When is one technology better than another? As STS researchers we can only say 'it depends'. We know that technological progress doesn't proceed along pre-determined tracks. It results from the uncertain interplay of scientific possibilities with industrial and political interests. We know that the performance of a technology depends both on the context in which it is used and on the metric by which it is assessed. By contrast in public health, as in medicine, it has been assumed that provided sufficiently rigorous methods are used universally valid, context-independent assessments can be made. What of vaccines? Beyond the IPV/OPV controversy there are few studies of choices being made between two vaccines targeting the same pathogen. But here too globalized interests sustain the view that one vaccine must be best, even if resource constraints mean that not everyone will be offered it. The race to produce a safe and effective Covid-19 vaccine rapidly mobilized competing commercial, political, and strategic interests. Today there are thirty or more approved, though very different, vaccines. Many more are in the pipeline. They will never be assessed comparatively on the basis of globally agreed criteria. Interests, both political and commercial, have become too great. With no sufficiently authoritative an adjudicator choice may be left to public opinion. Though sensitive to cultural (and epidemiological) variance, this is also the target of political and commercial manipulation. And what of the future? Should widespread patent-free production be the goal? Adapting vaccines to future variants? Combinations with other antigens (such as influenza)? Protection of communities rather than individuals? Who can say? Perhaps it will involve all of these things. We argue that the past two years have fatally undermined the assumption that through rigorous analysis a 'best' vaccine can be identified.

463 GLOBAL GOVERNANCE AND STATE FAILURE IN ASSESSING AND CONTROLLING POST-VACCINATION COMPLICATIONS IN ROMANIA. WHAT LESSONS CAN BE LEARNED FROM THE CURRENT PANDEMIC FOR THE NEXT GENERATION OF PLATFORM-BASED VACCINES?

Valentin-Veron Toma (Institute of Anthropology „Francisc I. Rainer" of the Romanian Academy)

There is a consensus in the medical world about Covid-19 vaccines, distributed at EU level, that serious safety problems are extremely rare. However, an article published recently by the journal Science pointed out that, in non-negligible cases, Covid vaccines can cause Long-Covid-like symptoms (Couzin-Frankel & Vogel, 2022). Moreover, it has been shown that some authors have already proposed pathogenic mechanisms to explain severe post-vaccine side effects. According to EMA, „the national competent authorities continuously monitor EudraVigilance to identify any new safety issues that require investigation" (EMA, 2022). It is therefore assumed that there is complementarity and partnership between local public institutions and transnational bodies, but in many countries around the world, not just Europe, the state sovereignty has been eroded in the context of a transition to global health governance.

The present paper aims to examine the mechanisms by which the Romanian state has progressively lost, not only full control over domestic vaccine production and distribution, but also the strategic position of monopoly over nationwide studies on vaccine efficacy, safety and quality through established public institutes. I argue that, as a result, the state has failed in its efforts to position itself as a credible institutional actor whose first concern is the protection of the population during a pandemic. The study is based on qualitative interviews with health officials, archival research and analysis of official documents issued by Romanian public authorities responsible for managing the national vaccination campaign and for communicating with the general public on vaccine efficacy and potential adverse reactions to Covid-19 vaccines. What lessons can be learned? Global governance of vaccine production and distribution deprives countries of mechanisms needed to keep their populations safe and well informed, and this contributes to growing distrust of vaccines purchased from other countries, especially those produced by new and expensive technologies.

994 THE LEGAL UNCERTAINTY OF PHARMACEUTICAL INNOVATION POLICY IN BRAZIL: PAST OR FUTURE?

Fernando Aith (University of São Paulo) Marina Borba (University of São Paulo) Julino Soares (University of São Paulo) Cláudio Cordovil (Fundacao Oswaldo Cruz)

In Brazil, the national pharmaceutical industry development policy started in the 1970s and 1980s. However, budget cuts in research institutions have hampered, since the beginning, the long-term development process of

companies related to R&D activities. In the 1990s, the pharmaceutical industrial policy suffered a rupture with the discontinuity of the science and technology policies in force until then. This scenario produced deficits in the sector's trade balance, which began to import pharmaceuticals supplies and finished drugs. The pharmaceutical industrial capacity had a new development period with the enactment of the generic law in 1999. The third wave of industrial policies for the development of an economic industrial health complex in Brazil began in 2004 with the inclusion of pharmaceuticals industries as one of the strategic sectors of industrial development policy and the subsequent institution of the Executive Group of the Industrial Health Complex. This Group was responsible for the implementation of the Productive Development Partnerships Policy (PDP) intended to transfer technology from strategic products to the Brazilian universal public health system with the objective of internalizing the production of these products and their drugs in Brazil. However, Brazil configures an instable democracy, and a new rupture seems to be in process: in 2019, the former Minister of Health suspended contracts for the manufacture, by public laboratories, of 19 medicines distributed by the Brazilian health system, on the grounds that such agreements would be disadvantageous to the government. This political instability is the result of some characteristics of Brazilian public sector, such as the disarticulation of industrial and innovation policy with health policies, and generates legal and political uncertainty in the Brazilian pharmaceutical innovation scenario. The stability of democracy and health systems governance and the ability to adapt to macroeconomic changes are essential for the success of pharmaceuticals industries development strategies.

846 THE ROLE AND POSITION OF HTA AGENCIES IN THE GOVERNANCE OF INNOVATIVE MEDICAL TECHNOLOGY: A CRITICAL INTERPRETIVE SYNTHESIS

Renee Else Michels (Erasmus School of Health Policy and Management) Bert de Graaff (Erasmus School of Health Policy and Management) Payam Abrishami (Erasmus School of Health Policy and Management) Diana Maria Johanna Delnoij (Erasmus School of Health Policy and Management)

Rapid and evolving innovation in the field of medical technology has strong implications for the governance of those technologies now and in the future. The governance of innovative medical technology in Europe occurs in a network of actors, including but not limited to Europe-wide market authorities, national-level agencies for health technology assessment (HTA), health insurers and health care providers, who are tasked to envision and regulate the future(s) made through these innovations. Such future-making happens through making use of factors such as clinical evidence, (local) cost-effectiveness and efficiency, and policy instruments such as horizon scanning and cost benefit analyses. The development and introduction of innovative medical technologies challenges these factors and instruments. Moreover, at the European Union (EU) level, new regulations are impacting the medical technology market, challenging existing timelines, processes, and role divisions.

We will report on results from a Critical Interpretive Synthesis, in which we explore different perspectives in the academic literature on the governance of innovative medical technology. Empirically, we focus on the role and position of HTA agencies in Europe. The report seeks to describe the following: What different perspectives exist in the academic literature on the governance of innovative medical technology? How have these perspectives changed over time? What constitutes such governance, e.g., evaluating, overseeing, gatekeeping, and how – and in what way – are different futures being construed and translated across (institutional) boundaries? In our analysis we describe and critically reflect on these different perspectives, examples, and controversies in the academic literature on the role and position of national HTA agencies within Europe, regarding the governance of innovative medical technologies.

Room N118 - Panel 037. CARE AS A HIGH-TENSION ZONE: INVESTIGATING THE AMBIVALENCES OF CARE IN THE MIDST OF THE PANDEMIC

Session 3

952 RECONFIGURING NURSING IN PANDEMIC TIMES: TELE-MEDICINE AS (PERCEIVED) SOLUTION IN THE TENSION ZONE OF SAFETY AND AFFECTIVE CARING

Magdalena Eitenberger (University of Vienna & Ludwig Boltzmann Institute of Digital Health and Patient Safety)

When COVID-19 first became a public concern in Austria in March 2020, public health policy almost immediately honed in on identifying and consequently implementing measures to protect vulnerable groups. The population of older adults in residential care homes became a main target for such measures due to their high risk for severe illness and death in case of infection, and the likelihood of infection spreading uncontrollably under conditions of proximity in these institutions. Residential living therefore shut its doors to the public as an immediate measure before testing or vaccines became available.

In my research project, I closely followed the implementation process of a tablet-based videoconferencing tool which was introduced to help connect residential care homes to physicians “outside.” Physicians thereby provided medical care from a distance as nurses and caregivers worked “inside.” I conducted interviews with nurses, physicians, and institutional managers about how they were each navigating emerging tensions between assuring physical safety and providing affective care for elderly residents in pandemic times.

I focus specifically on the role of tele-medicine tools as mediators in this emergent tension zone. Using tele-medicine tools both reconfigured how different professional groups were working together to provide care, and elicited fundamental questions about the care needed to make older adults in residential living feel fully cared for – a question relevant even in pre-pandemic times, but more starkly apparent as “outside” contact was reduced to a minimum and the care space contracted. In the findings presented, I showcase how differing enactments and understandings of care are amplified when technologies are used as imperfect but best-case solutions, and how re-negotiating the boundaries between safety and affective care work may shape our post-pandemic world. I also reflect on my own use of digital tools, safety concerns, and novel tensions while researching (in) the pandemic.

867 DIGITISING PRACTICES OF SUPPORT IN COMMUNITY MENTAL HEALTH DURING COVID-19

Ian Tucker (University of East London)

A digitisation of mental health support has been underway for some time (Ellis & Tucker, 2020). This includes the development of digital versions of existing practices of support, such as embedding existing therapeutic interventions in digital form (e.g. CBT); new forms of online-only support (e.g. peer support communities); and the use of digital platforms by existing community-based mental health groups (e.g. creative arts). These moves were underway pre-Covid, but the virus has catalysed a digitisation of support.

In this paper I explore new practices of support enacted through digital platforms during the pandemic. Several things are at stake in these new forms of care; 1) The potential reconfiguring relations that individuals have with own mental health, and simultaneously that of others - which can operate as a tension between individual and collective need; 2) The potential for new senses of support and security through engaging with support groups via video calling from home environments - changing existing relations with support groups and home spaces; 3) In-person relationships of support (e.g. as featuring in peer-groups) face a simultaneous distancing (geometrically) and closeness (immediacy of digital support). As such, digital practices of support can transform the multiple spatial and temporal relations that constitute support, as technologies become relational actors in support ‘in the present’, which is simultaneously shaped by memories of the past and anticipations as to what the future holds.

These questions shape the discussion in the present paper, which draws on a project investigating Covid-19 support practices in relation to community mental health groups in the UK that faced having to adapt their provision as the pandemic struck. The paper presents insight of the reconfigured support practices and their impact on experiences of mental ill-health.

73 TENSIONS AND ESCAPES IN INDEPENDENT LIVING INFRASTRUCTURES FOR PEOPLE WITH DISABILITIES UNDER COVID-19

Joan Moyà-Köhler (Universitat Oberta de Catalunya (UOC)) Andrea Garcia-Santesmases (Universidad Nacional de Educación a Distancia (UNED)) Lluvi Farré Montalà (Universitat Oberta de Catalunya (UOC))

The Covid-19 outbreak highlighted the structural deficiencies that institutionalized solutions had in sustaining their users' lives in all its dimensions. In this regard, less institutionalized models such as housing innovations based on the emergence of the Independent Living paradigm emerged as more resilient “care infrastructures”, seemingly able to better deal with the challenges that this disaster entailed regarding caring for people in situation of dependence. At the same time, the covid-19 crises put a strain on most of the projects that have witnessed how their spaces, conceived and designed under the principles of independent living, became incapable of sustaining autonomy as it was previously arranged.

From this standpoint and drawing from the intersection of an STS approach with the critical Disabilities Studies, we gathered an ethnography within two specific spaces for the promotion of autonomy: the "Guttmann Barcelona Life" conceived for people with physical disabilities, and the "Me'n vaig a casa", an independent living program for people with learning disabilities.

Working from the users’ experiences allow us to identify how paradoxically these independent living projects ended up –by public discourses, authorities’ health recommendations or the services’ readjustments–, in articulating new ways of disablement. As a result, the users' lives are placed into situations of greater vulnerability, with less effective control over their lives and making it more difficult for them to be included in the community.

From this interesting crossover the paper analyzes the opportunities that these same tensions opened up in those infrastructures. On the one hand by identifying care practices and sociomaterial arrangements that have been developed by professionals in the field, in order to sustain the enactment of an autonomous life, and on the other hand, allowing to draw on new roles and strategies of resistance that some users developed during the Covid-19 crisis.

767 COMMUNITY AS SOCIAL INFRASTRUCTURE FOR ELDERLY CARE: TAKE THE CASE OF CARE PRACTICE OF THE COMMUNITY MEAL PROGRAM FOR THE ELDERLY IN MAILIAO, TAIWAN

Jui-Hsin Cheng (the Graduate Institute of Humanities in Medicine, Taipei Medical University)

This paper discusses the tensions and adjustments of the community meal program for older adults in the midst of a pandemic in Mailiao Township, Yunlin County, Taiwan. The community meal program has long been an important part of the government's Long-Term Care 2.0 policy. The government takes aging in place as the collective care ideal, which is reflected in the government's policy of pursuing the coverage rate of community meal stations in various places. Mailiao Township is located in Yunlin County, which is relatively resource-poor in Taiwan, but in 2018 it achieved the goal of having a community meal station for the elderly in every community. However, under the influence of the epidemic, as the Taiwan government issued a three-level alert, the community meal program for the elderly was suspended in May 2021. Especially during the Covid epidemic, the elderly is regarded as a high-risk and vulnerable group that is prone to become seriously ill patients. This paper identifies how community-based care practices responded to the tensions in the midst of a pandemic. Tracing the experiences of the community meal program in Mailiao, the paper explores how community meal stations acted as non-human actors and how care was enacted and performed. I conducted ethnographic research at three community meal stations in Mailiao for two weeks, and completed 10 in-depth interviews with local actors and the elderly’s family. This paper makes two key arguments: First, tensions within the family caused by the closure of the community meal program. The care practices about dietary needs of the elderly had to be renegotiated within the family. Second, the local community has developed other care practice strategies to meet the dietary needs of the elderly, such as switching to meal delivery, or having vaccinated neighbors or volunteers to help the elderly pick up meals.

Room N114 - Panel 038. MAKING MEDIA FUTURES: FROM MEANINGS TO IMAGINATIONS AND EXPECTATIONS

Session 3

48 #NATURE VS. #CLIMATE - INSTRAGRAM AS A SITE OF CONTESTATION OF TECHNO-SCIENTIFIC IMAGINARIES

Noa Turgeman (Bar-Ilan University) Anat Ben-David (The Open University of Israel) Noah Efron (Bar-Ilan University)

Throughout history, the entangled interrelationships between nature and culture continually reflected the social and technological environments in which they were formulated (Macnaghten & Urry, 1998; 2001). In the context of the current climate crisis, the contestation of the Anthropocene as a new geological epoch also redefines the rapport between nature, culture, human agency and technology (Latour, 2018; 2020), and calls for an urgent articulation of the shaping and contestation of nature in digital media environments.

Focusing on Instagram, this study analyzes the contestation, epistemology, aesthetics and rhetoric of the mediation of nature and climate through the platforms' affordances and the cultural practices of its users (Leaver, Highfield, & Abidin 2020). It argues that while Instagram's affordances encourage the beautification and aestheticization of nature, climate advocates are repurposing them to de-aestheticize and textualize the debate, so as to frame climate change as anthropogenic. Following Levy and Spicer (2013), we identify competing "climate imaginaries" – the shared understandings of the climate related discourses and aesthetics, through which the struggle among individual users, activists, NGOs, and commercial actors can be understood as a form of political participation, or as the formation of material publics (Marres, 2016). Building on previous work on controversy mapping of techno-scientific debates in Science and Technology Studies (Marres, 2012; Munk, Meunier & Venturini, 2019; Niederer, 2013; Rogers & Marres, 2002), we analyse maps of co-occuring hashtags related to #climate and #nature in 600k posts, to show how they form separate clusters between the aestheticized and the contested. Subsequently, we combine AI-based visual analysis tools with qualitative visual analysis to analyse the competing aesthetics and rhetoric of posts associated with #climate and #nature. In doing so, we contribute to contemporary understanding of the co-shaping and contestation of debates on sustainability and climate change by and through social media platforms.

532 FRAMING EMERGING TECHNOLOGIES: HOW COMPANIES CONCEPTUALIZE AND DISCUSS THE VALUE OF EMERGING TECHNOLOGIES ON TWITTER.

Gulnara Nussipova (Stockholm Business school)

Emerging technologies are open to a variety of interpretations and interests (Pinch and Bijker, 1984). It is becoming increasingly clear that companies often seek to strategically influence the framing of emerging technologies (Hoppmann et al., 2020). For example, social media provides an opportunity to directly influence public discourse through framing (Egliston and Carter, 2020). Scholars in the field of science and technology studies (STS) have often emphasized the powerful nature of frames (Jasanoff, 2003; Levidow and Carr, 2007). However, little is known about how the framing of new technologies is influenced by technology companies.

This article applies framing analysis to examine how technology companies frame the value of emerging technologies in their Twitter posts. The goal is to examine how companies frame new technologies and thus contribute to the general discourse by giving them positive meaning. As Jasanoff and Kim (2009) have noted, sociotechnical imaginaries refer to the ways in which collective perceptions of science and technology are shaped by non-scientific institutions (such as the state or corporations). These visions can lead to the adoption or rejection of a particular technology. The collective perceptions shaped by these visions form collective expectations that legitimize certain technological pathways and discourage others (Konrad et al., 2017). For example, Sadowski and Bendor (2018) show how the corporate narratives of dominate the discourse on smart cities by presenting a particular vision of the future crisis, for which they offer the technological solutions.

The emerging discourse about these technologies is the choice of frame, which is influenced by corporate interests. The results show that there is an attempt to frame the technologies positively in the interest of industry players. Several themes emerge in the framing rhetoric, such as hope for a better future and empowerment of people.

402 SOCIO-TECHNICAL IMAGINARIES OF THE INTERNET OF THINGS

Ana Delicado (Institute of Social Sciences, University of Lisbon) Ana Viseu (IADE - Universidade Europeia) Ana Nunes de Almeida (Institute of Social Sciences, University of Lisbon)

The Internet of Things (IoT) is a range of technologies, relying on communication networks, through which everyday objects are connected to the internet. It has applications in countless domains, such as domestic security, health, assisted living, environmental monitoring, energy saving, or industrial manufacturing. Technoptimists highlight the gains in efficiency, sustainability, public health and convenience, as well as positive impacts on economic development and employment. Technopessimists underline risks in terms of data protection and security, privacy and surveillance, tracking and manipulation, as well as more tangible, material perils of hacked or malfunctioning devices endangering users, workers and the community.

Both optimist and pessimist perspectives abound in media representations of sociotechnical futures relying on IoT: from shiny and clean home interiors where all appliances work flawlessly to provide dwellers with all the services and commodities at the command of a button or a voice instruction, to unruly AI that locks owners inside their own homes, tortures them with loud music and flashing lights, misbehaving window blinds and unbearably hot or cold air conditioning. Audio-visual fiction, legacy media and new media produce and disseminate a wealth of information that cannot but have some influence on decision-makers that design policies and regulations, consumers that buy (or avoid) products or companies that produce them.

This presentation will address narratives collectively held and institutionally stabilized that preside over the making and governing of IoT technology and the discourses and imagery around its affordances, as well as its risks. It is based on media analysis, in particular systematic content analysis of news published in the past five years about IoT in three newspapers with an international reach (El Pais, The New York Times, The Guardian). It is part of an ongoing research project funded by the Portuguese Foundation for Science and Technology.

Room N101 - Panel 048. TRANSDISCIPOLINARY RESEARCH: HOW TO STAY WITH THE TROUBLE AND ENABLE CO-LARNING?

Session 3

668 ACROSS BOUNDARIES AND INTO VISIONS: REFLECTIONS FROM A TRANSDISCIPLINARY RESEARCH ON SOIL FERTILITY

Rita Giuffridi (CNR-IREA) Christian Colella (CNR-IREA) Laura Colucci-Gray (University of Edinburgh) Laura Criscuolo (CNR-IREA) Alba L'Astorina (CNR-IREA)

The complexity of the current ecological crisis dramatically exposes the limits of normal science as the provider of truth to inform decision-making processes at the interface of ecological systems, society, and governance. To meet these challenges, the science community itself is bound to revisit its methods, aims, and its social role, forging new bonds not only with society at large, but also with ecological systems, to co-produce relevant, responsible, and fruitful knowledge practices. BRIDGES (Building Reflexivity and response-ability Involving Different narratives of knowledGE and Science) is an Italian research project interested in transdisciplinary and reflexive modes of knowledge production applied to the socio-ecological topic of soil fertility. Involving natural-social scientists, artists, farmers and active citizens, the project will first uncover the grand narratives of science that drive researchers in their work, their practices and roles and how such narratives interface with policy narratives concerning the management and socio-ecological systems. Second, the project will develop experimental methods for co-producing hybrid research that fosters systemic and relational thinking through trans-disciplinary, participatory processes involving early career researchers in practices of aesthetic exploration and measurement of the complex and dynamic ecosystem of organisms that populate the topsoil, in rural and urban contexts. While the project is ongoing, we present here an overview of the project, some initial insights from everyday practice, preliminary results, and future steps. We will also discuss the central and yet unexplored value of reflexive assessment as integral to the development of the collective space generated by BRIDGES.

903 MAKING PATIENT KNOWLEDGE MATTER: THE PLACE OF NARRATIVES OF COVID19 AND CRITICAL ILLNESS FOR DEVELOPING HEALTH SERVICE IMPROVEMENTS

Annelieke Driessen Driessen (London School of Hygiene and Tropical Medicine)

In this talk I reflect on the processes of translation between the notions of ‘patient experience’ and ‘health service improvements’.
The remit of my recent research post is based on the assumption that patient experiences could be easily mobilised for health service improvements. More specifically, my research objectives were to:
1) develop a module about Intensive Care with COVID19 for Healthtalk.org, a web-based database of patient narratives, based on 40 in-depth interviews with patients, and family members of those who were critically ill with COVID in the UK between march 2020 and November 2021.

2) use insights from these interviews to inform focus groups discussions with health care practitioners and policy makers, to identify possible avenues of developing health service improvements.
Here, I critically examine the processes involved in translating ‘experiences’ to ‘improvements’. I ask: How to tame patient narratives ‘of' COVID19 on a website without reifying the condition as stable and singular? How to draw out my research participants’ knowledge for learning and developing ‘improvements’ in practice? How to stay with incongruences and tensions, rather than reduce them?

I draw out learnings about what STS sensibilities may offer in relation to improvements of health care practices. I suggest that rather than flattening out these differences and tensions, we must keep the ‘folds’ and incompatibilities: thinking with the temporal and geographical ‘translations’ of narratives paves a way to contribute to a form of peer support, and improvement initiatives for/in healthcare services without assuming coherence or completeness.

516 ENABLING TRANSDISCIPLINARY WORK: INSIGHTS FROM A NEWLY ESTABLISHED FACULTY CAMPUS FRYSL&ACIRC;N

Anne Beaulieu (Knowledge Infrastructures Dept, Campus Fryslân, University of Groningen) Sarah Feron (Knowledge Infrastructures Dept, Campus Fryslân, University of Groningen) Andrej Zwitter (Governance and Innovation Dept, Campus Fryslân, University of Groningen) Caspar van den Berg (Global and Local Governance Dept, Campus Fryslân, University of Groningen)

Transdisciplinary projects are framed as connecting scientific and non-scientific stakeholder communities at Campus Fryslân. The vision of the faculty is to be a world-renowned faculty for inter- and transdisciplinary education and research across different disciplines, at the interface of academia, industry, government and civil

society. This vision has been present from the preparatory phases, some years ago. Now four years after the official launch of the faculty in 2018, we are in a position to reflect on the successes and challenges of transdisciplinary research. In this paper, we survey and analyze the everyday politics and practices of transdisciplinary research. We examine the practices of organization, valuation, and communication that have been put in place.

At the organizational level, these include interdisciplinary departments and profiles for academic and professional staff. It also entails substantial efforts to connect to stakeholders whose commitment is essential for transdisciplinary work. At the institutional level, the faculty paid particular attention to being well anchored in the provincial and national fields of political, corporate, and other academic actors.

In terms of valuation practices, we have developed an innovative HR policy, actively promote the celebration of a wide diversity of types of successes and engagements in research, and stimulate the connection of global challenges with local solutions. With regard to communication, we have paid systematic attention to the discursive and material connections between research, teaching and engagement.

Finally, we set out which skills and learning for our students have been incorporated in our teaching programmes, and explain what we need to further learn as an institution and as professionals to pursue our trans-disciplinary mission. We also identify a number of frictions that arise at individual, project and faculty level, and share some of the mitigation of risks and efforts to ensure the sustainability of our transdisciplinary approach.

Room N111 - Panel 061. THE POLITICS OF AI-BASED SECURITY - PREDICTING AND IMAGINING THE FUTURE

Jens Hälterlein (Centre for Security and Society, University Freiburg)
Daniel Marciniak (Max Planck Institute for Social Anthropology, Halle (Saale))

Advancements in the AI-subfield of machine learning are already transforming security practices in various contexts, including military operations, policing, intelligence work, private security, and pandemic management. In many cases, the use of AI-based security technologies aims at predicting the future based on probabilistic calculation. In law enforcement, for instance, AI can be used to pinpoint likely places and times of future crimes, terrorist attacks, and social unrest or to identify individuals at high risk of becoming a future (re)offender, terrorist, or victim (Benbouzid 2019, Brayne 2021, Hälterlein 2021). Moreover, in the course of the Covid-19 pandemic, AI has been increasingly used for epidemiological modelling of how the disease spreads along with different scenarios. These technoscientific predictions render the future knowledgeable in order to act upon it. They are political in the sense that they legitimize certain interventions and delegitimize others.

While tech companies highlight the merits of equipping security actors with these seemingly powerful tools and both activists and critical scholars raise awareness for the dangers that their use can bring with regard to data protection and the discrimination of minorities, AI-based security technologies have also become a matter of concern for policy-making. In recent years, many governments and supranational organisations have published strategy papers in which they present their visions of the future development and application of AI. These different visions articulated by various actors at once describe possible technoscientific futures and prescribe technoscientific futures that ought to be attained or to be avoided. They aim to legitimize investments in and/or the stricter regulations of AI-based security technologies.

In conversation with the conference theme, we invite scholarship that seeks to discuss the practice and politics of technoscientific futures. We welcome presentations that address at least one of the following questions:
- How are AI-based security technologies used to predict or forecast likely future events? How do they relate to non-AI-based practices of prediction?
- How do these technoscientific practices of prediction relate to (pre-existing) practices of transforming or governing the future (pre-emption, prevention, pre-mediation, contingency planning, risk insurance etc.)?
- What are the obstacles of doing research in this field and how can we deal with them?
- How are questions of security addressed within the imagination of futures of AI? Presentations may examine imaginaries at all levels: national governments, international organisations, NGOs, communities of practice, scientific communities, corporations, social movements and not least science fiction.
- How do desirable futures relate to criticisms of and resistance to AI-based security technologies (lethal autonomous weapon systems, biometric facial recognition, predictive policing, etc.)? What alternatives are imagined?
- What is the impact of the politics of imagining futures of AI on the politics of predicting futures with AI?

Session 1

587 THE MILITARY-INDUSTRIAL-ACADEMIC COMPLEX AND PROJECT MAVEN: IS MILITARY RESEARCH ALLOWING A TECHNICAL ELITE INTO POLITICS?

Jaspreet Jagdev (University College London (UCL))

It is well documented that sociotechnical imaginaries affect our technologies - implicitly and explicitly. Despite this being well documented, we still have instances of how biases impact our technologies and the issues that this can cause being ignored, even at times in which democracy and, more importantly - lives are at stake. Consider Google's 'project Maven'. This project was a military contract won by Google, in which it was to develop a machine learning algorithm on behalf of the Pentagon to sort through reconnaissance data . Google employees working on the project refused to work on such a project in a very public setting, publishing an open letter to their CEO in the New York Times (Shane and Wakabayashi, 2018). In this letter, the Google employees stated that Google shouldn't be in the 'business of war', and argued that it would be damaging to their brand image. This raises questions around the military-industrial-academic (MIA) complex, and questions about whether military strategy is opening the door for people with no political experience to have a say in our politics without any democratic voting process. In the instance of project Maven, Google employees managed to put enough pressure on Google to force them to drop the contract. However, this public instance of military contract work forces us to question whether we are adding to a power imbalance by having military missions that guide the research being done by big and powerful technology companies that already face little recourse. This paper will explore how the MIA complex includes companies such as Google, how a homogenous sociotechnical imaginary amongst technology developers can be problematic, and what this means for democracy.

Shane, Scott, and Daisuke Wakabayashi. "'The business of war': Google employees protest work for the Pentagon." The New York Times 4.4 (2018).

369 UPSCALING GROUND TRUTHING FOR THE AIRPORT

Bettina Paul (Universität Hamburg) Sylvia Kühne (RWTH Aachen Universit) Torsten Voigt (RWTH Aachen Universit)

“The power to predict” (Bosch 2021) is a key vision for various entities that have started to develop and test machine-based threat prognostic methods. These systems reframe or make obsolete the importance of this psychological expertise for decision making that was formerly important for deception detection procedures. In the context of large-scale settings these approaches aim at detecting harmful intentions, thereby using screening methods that are based on semi- or fully automated systems. With their goal to enhance national security, particularly for border control contexts, airports serve as their key sites for testing and deploying.

In this paper, we highlight the epistemology, promises and expectations (Akrich 1992; Brown et al. 2006) that shape the development and practices of automated intent detection. Former intraindividual concepts of baselining in order to detect deviations in a person’s reaction are transformed into ways of mass ground truthing in a large-scale context. The research for this paper is part of a larger project on truth verification in the field of airport security. Based on document analyses, interviews and initial ethnographic observations, we will highlight the specific concepts of ground truthing that serve as method for intention detection.

By extrapolating the fundamental basis of these practices and their theoretical and practical conditions we will investigate how in the course of upscaling, the theoretical foundations of deception detection procedures are transformed into automated systems and which expectations and promises the different actors of the field associate with them.

597 NON-TECHNOLOGICAL DRIVERS FOR AI-BASED SECURITY

Georgios Kolliarakis (German Council on Foreign Relations)

This paper focuses upon current developments around pattern recognition technologies. It addresses technoscientific imaginaries behind AI-security applications as a “wicked problem” at three (technological, organizational/institutional, political) intertwined layers. It argues counter to a techno-determinist logic, that what decisively shapes acceptance and absorption of emerging security innovations, beyond technological performance and cultural attitudes, are, first, organizational and institutional contextual factors, and second, policies with broader geopolitical objectives (i.e. “EU's strategic non-dependence”). At the technological layer, transfer of multi-purpose pattern recognition R&D among the civil, space and military domains is generating beneficial synergies, but also broader misuse risks. Targeted efforts will be necessary to render applications better-fit for each specific purpose, e.g. by reducing Type I and Type II errors. Crucial is, however, the embeddedness of such applications within concrete cultural, organizational, institutional, and regulatory framework conditions of security provision. Recent “use-case”-oriented approaches, such as those pursued in the ISO/IEC JTC 42 on AI standardization, or in scenario-driven THOR (Technological-Human-Organizational-Regulatory) assessment methodologies in security research, demonstrate the need for “rich-context” analyses. This development paves a paradigm shift from governance of technology, towards governance of technology usage, fostering a mix of “self-“, “soft” and “hard” regulatory instruments. Not least, the pressure generated by AI-policies by high-tech players, such as the PRC (“Civil-Military fusion”), or the US (“National Security Commission on AI”), and the rising global technopolitical power races, re-configure the rules of the game and challenge EU’s capacity to act and keep pace. Current policies at European level (industrial, trade/competition, digitalization, supply-chain due-diligence, critical raw materials), or action plans on critical infrastructures, border management, trans-national crime and terrorism, shape indirectly STI trajectories also in the security domain. The paper showcases the key-enabling or constraining character of the above factors and advocates a more systematic “whole-of-government” policy mindset for AI-based security applications.

998 AI VS. THE HATE? IMAGINING AND CONSTRUCTING THE POLICING OF ONLINE HATE SPEECH

Jens Hälterlein (Centre for Security and Society, University Freiburg)

With its National Strategy for Artificial Intelligence (AI), published in 2018 under the title "AI made in Germany", the German Federal Government presents its visions of the future development, application and regulation of AI technologies. The strategy and other related documents not only encode what is attainable through the use of AI (in terms of wealth, health, sustainability and security), but also articulate a desirable future that connects a national S&T project to an active state that provides for the flourishing of the nation’s innovative abilities and the protection of the fundamental rights of its citizens.

In my presentation, I want to shed light on the ways this sociotechnical imaginary (Jasanoff/Kim 2009) of an “AI made in Germany” structures R&D of AI-based security technologies. For this purpose, I will present results from a case study on an applied-research project funded by the German Ministry for Education and Research as part of its "Civil Security Research" program. The project deals with the automated classification of social media data in the context of the fight against hate crime.

My presentation will particularly address the following questions: How is an AI-based technology imagined to solve a security problem and what functionalities are ascribed to this technologies? What promises and expectations with regard to the efficiency, objectivity and trustworthiness of future security work are mobilized? What role does the creation of scenarios play within the R&D process?

Room N115 - Panel 062. MAKING SCIENCE IN PUBLIC: STUDYING SCIENCE COMMUNICATION AND PUBLIC ENGAGEMENT

Session 3

474 #FUCKCANCER. HOW WOMEN WITH INCURABLE CANCER DISCUSS AND INTERPRET BIOMEDICAL KNOWLEDGE ON INSTAGRAM

Afke Wieke Betten (Radboud University) Jill van der Kamp (Radboud University) Lotte Krabbenborg (Radboud University)

For long, illness was a personal affair experienced in private, perhaps only discussed with relatives or healthcare professionals. With the introduction of the Internet, online illness communities emerged, via blogs, forums or social media. As such, narrating illness and negotiating biomedical knowledge became a public activity for society to engage in regardless of time or distance.

With a digital ethnographic approach, we studied the accounts of 60 women, trying to uncover how they narrate biomedical knowledge regarding their cancer on Instagram and how Instagram's specific affordances play a role in this.

We found that women use their daily life experiences, experiential knowledge and self-education as the interpretative framework from which they assess and reconstruct medical knowledge. We found that Instagram provides the tooling to weave living with cancer, including negotiating medical knowledge and technology development, into everyday life and the other way around. To illustrate, women use scientific jargon from biomedical research in posts and hashtags, for example the use of hashtag #CA125, which is a tumor marker for ovarian cancer, to find peers worldwide. We also found that women inform each other about new medical trials or which therapies were most beneficial in their own experience.

Our research showed that online public spaces, such as Instagram, provide insight into the ways people reconstruct and give meaning to biomedical knowledge in their daily lives. Building upon Strekalova et al. (2017) and Davies & Hara (2017), we will argue that the next step for science communicators is to explore to what extent these stories can and should become part of the biomedical discourse in order to enrich deliberation and decision making processes on the development and implementation of new technologies.

133 THE PUBLICS OF PERSONALIZED MEDICINE

Lea Skovgaard (University of Copenhagen)

When organizations facilitate public engagement in science, their initiatives often relies on unarticulated assumptions about who constitutes 'the public'. In recent years scholars within STS has sought to reconfigure the notion of 'the public' by revisiting theories of American pragmatists. These scholars argue that multiple publics exist and that publics emerge and dissolve around issues. Accordingly, these scholars talk about 'issue publics' rather than a 'general public'. It has also been pointed out how technological mediation affects the formation of publics. In this talk I present the work of a project in which I have empirically explored public legitimacy of data sourcing for personalized medicine in Denmark, a country which is renowned for its extensive infrastructures enabling reuse of health data. In the project I have used different methods to engage and construe different 'issue publics' of personalized medicine. I have studied four different publics, which I have construed using different methods, namely 1) a writing public (studied through a debate in news media) 2) a tweeting public (studied through social media analysis) 3) an enabling public (studied through interviews and participant observation) 4) a solicited public (studied through a survey). In the talk, I discuss who becomes engaged in the issue of personalized medicine through the methods I have utilized. I thereby contribute to discussions about the role researchers play in assembling different publics and how this affects the opportunity of including the voices of different publics in discussions about how technologies of the future should be formed and regulated. Finally, I contemplate over the difficulty in making questions about the data economy, in which health data used for personalized medicine feature, relevant for people who are not professionally involved in personalized medicine.

883 EXPERIMENTING WITH SCIENCE, DEMOCRACY AND THE "PUBLIC'S RIGHT TO KNOW" IN JAPAN: THE CO-PRODUCTION OF JOURNALISTIC ETHICS AND RESEARCH ETHICS DURING AND IN THE AFTERMATH OF THE STAP CELL REPLICATION EXPERIMENTS (2014-2017)

Melpomeni Antonakaki (Department of Science, Technology and Society, Technical University of Munich)

Journalistic conduct in Japan falls under the jurisdiction of the Broadcasting Ethics and Program Improvement Organization (BPO), the independent oversight body reviewing citizens' complaints targeting media practices. The BPO is authorized to hold broadcasters accountable vis-à-vis their constitutionally defined role as objective and neutral public authorities. In its almost 20 years of operations, it has ruled over numerous instances of breach of professional code of conduct. Yet to date, there has been one case of recognized human rights violation – the unethical and defamatory treatment a researcher received by an investigative reportage, commissioned by the national broadcaster NHK (July 2014). Haruko Obokata, a biochemist best known for her being the central figure at a high-profile case of misconduct investigation at the prestigious RIKEN, brought charges against the NHK, and won her case, despite experimental results of non-replication and charges of misconduct against her, seemingly supporting the respondent.

Practices and products of journalistic objectivity often become sites of contention during epistemic controversies that characterize late modernity. This is an unsurprising observation, considering how often the authority of both political and expert agents is performed in mediatized settings. Yet, media claim to experience their own crises, which deepen when other modern institutions are openly contested, as has been the case in the aftermath of sociotechnical disasters (i.e. Fukushima; BSE crisis) or the current pandemic. Opening the reflexive reasoning of ethics committees for STS analysis and walking, with the actors, the fragile constructs demarcating respective notions of truth, objectivity and social responsibility, allow to observe ways that the politics of technoscientific futures is at stake when critics contest 'displays of omnividence' in public fora. This concept, developed through my dissertation research, I offer here for discussion as part of the long preoccupation of STS scholarship with how constitutive visuality politics is to credibility.

232 ENCOUNTERING RESISTANCE: CONTESTING STATE SCIENCE ON ANTIMICROBIAL RESISTANCE

Eleanor Kashouris (University of Sussex)

Patient advocacy movements are familiar terrain for STS. UK-based patient mobilisations around urinary tract infection (UTI) are of particular interest as this common infection becomes a target of public health interventions around antimicrobial resistance (AMR). Public engagement in science is posited as one of two state-level responses to AMR, where scientists are charged with increasing the number of effective antimicrobials and the public with reducing demand on clinicians for existing antibiotics, highlighting a well-defined division of labour between state, scientists, and citizens.

Based on over 40 qualitative interviews with patients, clinicians and policymakers, and online ethnography conducted from 2019-2022, I argue that state-level public engagement on AMR is markedly unambitious in scope if not scale. UTI patients visible online make an issue by identifying themselves as targets of intervention and organising around access to antibiotics. In places, efforts are made to shift attention to other problematic uses and users of antibiotics, but elsewhere, expertise levied by the practices of evidence-based medicine is resisted by appealing to other kinds of scientific authority, invoking figures such as Fleming and Darwin. These patients enact their involvement in science as necessary for just, effective mobilisations on AMR.

I contribute an empirical example that notes less public loss of confidence in expertise, but develops Will's argument that public health approaches to AMR so far reflect loss of confidence in the public. Patients presenting themselves as publics for an issue encounter expert disinterest in engaging with reflective, antibiotic-using publics, instead opting for informational or non-cognitive approaches. The consequences of such exclusions become clear when claims to knowledge and pooling of experiences are transformed into collective action. My argument highlights possibilities to use STS insights to do otherwise and create different publics, in the face of depressing and depressed public health attempts to drive down antibiotic use.

Room N110 - Closed Panel 015. ALGORITHMIC REGIMES: INTERACTIONS, POLITICS, AND METHODS

Session 2

214 INFRASTRUCTURING COMPUTATIONAL DESIGN AS ALGORITHMIC REGIME

Yana Boeva (University of Stuttgart) Cordula Kropp (University of Stuttgart)

Code, algorithms and software are increasingly becoming infrastructures in different domains. In other words, they are subjected to a continuous process of infrastructuring along heterogeneous social, political and technological decisions. Research on infrastructures as sociotechnical systems has demonstrated the powerful regime effects and social implications of such hybrid systems. A central problem of infrastructuring processes is their transparency. Against this backdrop, the paper asks what happens when an infrastructuring through code, algorithms, and their software integration is specifically used to optimise the built environment? How are decisions made in such hybrid systems? These questions are explored in the field of architecture and construction, as data, algorithmic systems and artificial intelligence (AI) impact it through computational design.

Computational design in architecture combines different digital technologies and computational approaches. The increasing reliance on code, algorithms and AI-based software for form-finding or optimisation changes architectural practice towards designing processes with code, giving rise to a new algorithmic regime. Coding and algorithms are embedded in design software as scripts, plugins, and node-based visual programming with bounded manipulation options. Recent AI-based generative design tools go further in blackboxing coding into the software systems. Although practitioners often perceive computational design technologies and algorithmic modules as acting objectively, they are neither neutral nor autonomous. They follow social, material, organisational and political arrangements in these infrastructuring processes.

Following research in algorithmic studies, software studies and infrastructure studies, this paper argues that the algorithmic and data-based infrastructuring of computational design reconfigures practices and knowledges by making decisions and processes more inscrutable to its practitioners and the broader society. The paper draws on an empirical study of research developments of novel computational design processes for architecture and construction.

215 MAKING DIGITAL PUBLICS: ALGORITHMIC MEDIA AND THE FABRICATION OF PUBLICS

Nikolaus Poechhacker (University of Klagenfurt) Marcus Burkhardt (University of Siegen) Jan-Hendrik Passoth (European University Viadrina)

Recommender systems reorganize the dissemination of information and thereby give way to new kinds of publics. The increasing use of recommender systems can thereby be understood as a new algorithmic regime of information distribution that has the potential to splinter the public sphere into many different small-scaled publics by creating filter bubbles (Pariser, 2012) or echo chambers (Sunstein, 2009). This poses a challenge for democratic discourse .
However, while there is some evidence for the formation of filter bubbles (O'Callaghan et al., 2013), other findings speak against their existence (Borgesius et al., 2016; Haim et al., 2018). This indicates that the emergence of a filter bubble is contingent and context-sensitive. In our contribution we argue that different algorithmic techniques (Rieder, 2017) for recommendations impact the construction of publics. While not determining how publics are constituted, the algorithmic techniques mediate between actors according to their own specific logic, impacting the way these publics are constructed (Ang, 1991). Drawing on empirical fieldwork on the development of a public broadcasting recommender system powered by machine learning, we contrast two prominent ideal-typical algorithmic techniques for recommender systems. Collaborative filtering and content-based filtering both aim to provide personalized information. However, the techniques connect different actors in a wider network of interactions and make use of tracking data in a different way to computationally produce publics. In our contribution we investigate these algorithmic techniques to understand how they relate manifold interactions between news providers, data production, and users to producing different publics.

Describing algorithmic techniques is essential to understanding new algorithmic forms of information distribution. Critically analysing how algorithmic techniques are embedded in and mediate between databases, interfaces, and practices sensitizes us to the ways that the formation of digital publics. This also opens up perspectives for rethinking and redesigning new algorithmic regimes of information distribution.

216 ALGORITHM-DRIVEN RECONFIGURATIONS OF TRUST REGIMES: AN ANALYSIS OF THE POTENTIALITY OF FAKE NEWS

Jörn Wiengarn (High-Performance Computing Center Stuttgart) Maike Arnold (High-Performance Computing Center Stuttgart)

In our paper, we explore the potential effects of fake news, especially with regard to trust relationships. We claim that changes in the algorithm-driven production and distribution of information and news not only raise the sheer quantity and range of misinformation. On a more profound level, this also reconfigures basic social interactions and the construction of communities. The central aim of this paper is to conceptualise these far-reaching socio-epistemological effects of fake news.
To do so, we will demonstrate in a first step how our trust in news in general is embedded in a whole network of trust relationships, which we call trust regimes. These networks include both institutional and personal relationships and they are not merely epistemic, but rather relationships of recognition. Trust regimes thus constitute spaces of possibility of what is recognisable.
In a second step, we outline that misinformation and fake news is a phenomenon that is mainly contributed to the algorithmic conditions of how news is produced and disseminated in the online world today. Algorithms facilitate and accelerate immensely the production and distribution of information articles that deceptively resemble standard news. Finally, we will analyse the potential effects of fake news with regards to underlying trust networks. This analysis aims at describing the potential for change and associated expectations that new technologies can have on contexts of meaning in the lifeworld. More specifically, we will propose a conception of how fake news can produce effects of generalised mistrust or of polarisation. Against this background, it becomes visible how fake news represents not merely an additional source of alleged knowledge. Instead, they are regarded in their potential to reconfigure spaces of possibility within trust regimes.

Room N117 - Closed Panel 021. VIRTUAL PRESENCE: THE DIALECTICS OF LONELINESS AND TECHNOLOGY

Session 2

344 "THE WAY OUT OF LONELINESS IS DIGITAL": DISCOURSES ON ELDERLY NON-USERS AND DIGITAL INCLUSION MEASURES IN LONELINESS POLICY IN NORWAY AND THE UK

Elian E. Jentoft (Oslo Metropolitan University)

In recent years, several countries have enacted policies on the topic of loneliness and its reduction. These policies typically assert that issues of loneliness and digital exclusion are intertwined, with technology positioned as playing a role in the causation and alleviation of loneliness. The elderly are among the most frequent targets of policy interventions.

Little research has examined loneliness in political discourses. With a focus on how loneliness intersects with themes of technology and aging, I conducted a discourse analysis on loneliness-focused policies and political speech from the UK and Norway. The data includes white papers, green papers, internal briefings, political debate transcripts, press releases, public speeches and press statements made by political actors in both countries. Drawing upon theories on non-users and care in STS, I explore how assumptions about older adults as non-users position them as subjects in need of care.

My findings show that dominant political discourses often assume that older adults lack digital skills competency and that this contributes to their social exclusion. In both the Norwegian and UK contexts, mixed messages arise about non-users ranging from accommodation to conversion. Envisioned as left behind by the digital age, digital skills interventions are believed to bring elderly adults back into the societal fold. Older adults are further problematized as hard to connect with interventions due to their lack of online presence, warranting surveillance measures like digital loneliness heatmaps. Thus, digital inclusion and loneliness surveillance become both a crusade to connect and a politicized matter of care. Ultimately, this paper asks what these discourses say about the perceived nature of loneliness in the elderly, their tech preferences, and the role of technology in an increasingly digital world.

345 SHIELDED THROUGH THE SCREEN: TECHNOLOGY (RE)SCRIPTED FOR ELDERLY PEOPLE

Marit Haldar (Oslo Metropolitan University)

New technology is constantly being developed for a growing elderly population. This article focuses on a communication solution called KOMP, which is developed by the Norwegian company No Isolation to prevent loneliness among the elderly by letting them get virtually closer to their loved ones. KOMP is a screen with only one button (on and off), which is placed in the elderly person's residence and supposed to serve as a receiver of pictures, messages and video calls from the elderly person's close network.
Based on a special case where KOMP was used against its purpose, I will in this paper lead a theoretical discussion in close dialogue with Julia Kristeva and Simone de Beauvoir's theories of disability and old age. Kristeva highlights the vulnerability shared by all speaking bodies and urges us to recognize – without trying to integrate – the irreparability of all subjects. Similarly, de Beauvoir writes about old age as involving bodily destruction and moving towards an inevitable death. Age is a destiny, she claims. We are born, live, get older and die.
Building on these arguments, this article interrogates how KOMP articulates the elderly user and their assumed needs for social connection. I zoom in on one case where KOMP was used in an elderly care facility by a woman nearing her death. Whereas KOMP is designed to bring the elderly people closer to their loved ones, this case highlights how it can also serve its elderly user by doing the opposite: by shielding them from 'social invasion' in moments where their bodies allow for only limited forms of social contact.

346 CAN A COMMUNICATION TECHNOLOGY ENHANCE SOCIAL CONNECTEDNESS AMONG NURSING HOME RESIDENTS?

Sehrish Akhtar (Oslo Metropolitan University)

This study examines whether the use of a communication technology can enhance social connectedness among nursing home residents in Norway. In recent years, technology has been increasingly utilized as a method to overcome physical distance and to keep families connected. Institutionalized older adults are particularly vulnerable to social isolation and loneliness, and during the COVID-19 pandemic, long-term care facilities have implemented strict visitor restrictions, often preventing the residents from having their emotional and social needs

met. Although the pandemic has increased the need for digital solutions to support social connectedness among residents, few studies have addressed the use and impact of such technologies in nursing home contexts.

This study examines whether KOMP – a communication technology designed specifically for the elderly people – can enhance social connectedness among nursing home residents. The study uses two sources of data: Firstly, survey data were collected over a 14-month period, in three different waves, at 19 municipal nursing homes in Oslo. More specifically, the users of 320 devices (residents, relatives, and employees) answered a questionnaire prior to implementing KOMP, with a two- and six-months follow-up after the implementation. Secondly, the article also analyses a highly detailed weekly data stream from each KOMP, which was combined with the survey data and analyzed using multiple regression analysis. Preliminary results show a positive and significant effect of KOMP on both frequency of and satisfaction with the social contact between the residents and their relatives, implying that the intervention has the potential to enhance social connectedness. The study concludes by discussing what these results can tell us about the relationship between communication technology and social connectedness among the elderly more generally.

348 THE (A)SOCIAL ROBOT? ANALYZING THE AFFORDANCES OF THE TELEPRESENCE ROBOT AV1

Maja Nordtug (Oslo Metropolitan University)

The telepresence robot AV1 is developed to reduce loneliness among children who are unable to attend school because of illness or disability. To thoroughly understand how the robot both manages and fails to do so, we need to analyze how its users experience the social potentials of the technology. In this paper, we use affordance theory to explore whether and to what extent users of AV1 experience that the robot lives up to its social potential. We understand affordances along the lines of Donald Norman, who defines affordance as “a relationship between the properties of an object and the capabilities of the agent that determine just how the object could possibly be used”. As such, an affordance does not, in this understanding, belong to neither the medium – in this case the robot – nor the user. Rather, the focus of our analysis is on the relationship and interaction between the properties of the AV1 robot and the abilities of the homebound children using the robots. Methodologically, we base our analysis on 69 semi-structures interviews with 37 users of AV1 and/or their guardians. The users are homebound children living in Norway who used the robot for various illness-related reasons. Based on the interviews, we analyze the various properties of the robot, including the robot’s “eyes”, speaker, light, motors, connectivity, microphone, camera, and mobility in relation to the abilities of the users. We show how these properties are experienced differently by the homebound children depending on factors such as the children’s various health conditions, encounters with the robot, and preferences. By highlighting these differences, the article provides important insights for those aiming to help homebound children, while also furthering our understanding of the affordances of telepresence robots more generally.

Room N107 - Closed Panel 023. REINVENTING THE POLITICS OF KNOWLEDGE PROCTION IN MIGRATION RESEARCH

Session 2

445 AGE IN THE CIRCLE OF DOUBT – HOW IGNORING RELATIONALITIES RE/ENACTS MIGRANT CATEGORIES

Sabine Netz (University of Bayreuth)

In Germany, migrants' age becomes a crucial variable when they want to register as "unaccompanied minor refugees". Migrants often do not show papers to prove their claim of being minors and youth welfare officers try to determine migrants' ages in different ways. This article analyses age and age estimations as examples for categories and categorization practices in the border regime. It contributes to the literature that questions migrant categories by highlighting not only the discursive but the very material, ontological, and relational enactment of migrant and citizen categories. I demonstrate this by analysing how a specific categorization – age and age estimations – is done, legitimized and perpetuated. Eventually, my analysis challenges the distinction of citizens and migrants by showing their material relationship. I argue that age estimation practices are contingent on the ignorance of, first, scientific relationalities inside (forensic) age estimations, second, the relation of age estimations to the regular border regime and third, (post)colonial/imperial relationalities of this border regime and migrant/citizen categories. Theoretically, I draw on (feminist) Science and Technology Studies (STS), ignorance studies, studies about (post)colonialism and refugee protests to analyse my ethnographic material. This ethnography includes unexpected actors like elephants, cauliflowers and fruit trade companies.

446 MAKING WORKABLE KNOWLEDGE FOR ASYLUM DECISIONS: ON TINKERING WITH COUNTRY OF ORIGIN INFORMATION

Jasper van der Kist (University of Manchester)

As the number of asylum seekers grew, and flight stories became more complex, many Western governments deployed national research units, tasked with producing reliable Country of Origin Information (COI) to assist officials, judges and policy-makers in decision-making. Building on ethnographic research at Staatendokumentation, the COI unit at the Austrian Federal Office for Immigration and Asylum, the paper argues that country research practices can best be understood as 'tinkering' – e.g. making use of know-how, equipment, material sources at disposal to produce workable COI in conditions of uncertainty. The concept of tinkering is derived from science and technology studies (STS) and brings into view how experts cobble together a workable version of reality with the methodologies and materials at hand. Moreover, it highlights how country research involves continuous modification and adjustments to satisfy the needs of the unwitting case officer as the end-user of COI reports. Finally, using insights from feminist science and technology studies, the paper shows how country experts foster care for some things – i.e. the workload of case officers – at the expense of others – i.e. the experience of the asylum seeker.

448 BLACK BOX POLICE UNIVERSITY? THE PRODUCTION OF SCIENTIFIC KNOWLEDGE ON MIGRATION IN AND THROUGH POLICE

Philip Schäfer (University of Osnabrück)

Against the backdrop of global migration dynamics, police have become increasingly interested in scientific knowledge on cross-border mobilities and their local social impacts, as these dynamics have brought about changes in police work in many places. In this context, police and their research institutions have become knowledge producers on migration themselves. This holds true in particular for the German context, where the arrival of a large number of asylum-seeking persons in 2015-16 has prompted a series of police-led research projects. While there is a huge body of literature discussing the challenges of doing research on, with and in the police, surprisingly, the role of police academies, universities and other research facilities in the production of knowledge on migration has so far received only little scholarly interest. This is where my research comes in.

Drawing on critical border and migration studies as well as feminist STS, in my contribution I argue that police have to be taken seriously as producers of scientific knowledge and discuss ways of critically investigating the black box police university. How can we, on the one hand, 'think with care' (Puig de la Bellacasa, 2012) about the actual producers of scientific police knowledge on migration, while, on the other hand, acknowledging and contesting that this knowledge is always interwoven in as well as legitimized by state institutions, processes and logics of governing migration and thus cannot avoid being harnessed for regulatory interventions against people of colour and migrants?

437 EPISTEMIC DOMINATION BY DATA EXTRACTION: QUESTIONING THE DIGITIZATION OF ASYLUM PROCEDURES

Stephan Scheel (University of Duisburg-Essen)

Since 2016 Germany authorities use transliteration software, speech biometrics and data captured from asylum seekers' mobile phones to verify and/or determine the (claimed) country of origin of any asylum applicant without a valid ID document. This move has prompted some critics to claim that 'decision-making on refugees' fates is increasingly delegated to machines' (Biselli 2017). Based on fieldwork at a migrant reception centre in Berlin, this paper mobilises insights from critical data and science and technology studies (STS) to develop a framework that allows for more nuanced critiques of the digitization of asylum procedures. Rather than thinking human and non-human forms of agency as external to one another in order to juxtapose them in a zero-sum game, I comprehend the introduction of digital technologies into asylum decision-making procedures as a reconfiguration of existing 'human-machine configurations' (Suchman 2018). This conception allows me to show how the use digital technologies enables case workers to retain their position as an epistemic authority in asylum decision-making by assembling 'clues' about asylum seekers' country of origin generated by digital technologies into hard juridical evidence. Subsequently, I develop an alternative, more nuanced critique of the digitisation of asylum procedures. I identify a particular version of data colonialism in Germany's digitized asylum procedures that enables epistemic domination by data extraction.

Room N109 - Closed Panel 026. ART-SCIENCE FUTURES IN HIGHER EDUCATION (AND BEYOND)

Michelle Kasprzak (Willem de Kooning Academy, Rotterdam University of Applied Sciences)
Ginger Coons (illem de Kooning Academy, Rotterdam University of Applied Sciences)
Zeynep Birsel (Erasmus University)
Sanne Koevoets (Erasmus University)
Emma van der Leest (Willem de Kooning Academy, Rotterdam University of Applied Sciences)

In the binary system of higher education in the Netherlands, the roles of institutions are sharply defined. Universities are traditionally responsible for science and research, while universities of applied sciences – which include art and design academies – are focused on employability and practical applications of knowledge. Though fields like STS and Philosophy of Science are represented within the research and course offerings of universities and obliquely in the curricula of art and design academies, there is a tension between work deemed to be “science” (or knowledge production) and work deemed “applied science” (or knowledge application). This panel brings together researchers from both universities and universities of applied sciences, all of whom share an interest in the potential offered by the breaking down of educational binaries. Coming from STS and cognate fields, as well as critically-oriented design practice and scholarship, the papers on this panel address the present state and potential future institutions and infrastructures of scholarship and practice which cross the traditional boundaries between art and science and knowledge generation and application.

The papers in this panel run from the conceptual to the empirical, and concern a range of art-science spaces, both literal (for example, a biolab) and figurative (repair as pedagogy). All come from institutions which currently form part of a formal partnership which promotes art-science collaboration among higher educational institutions in Rotterdam. Thus, the papers in this panel are not only concerned with the methods, concepts, and outcomes of art-science collaborations, but are embedded in a structure which positions such collaborations as desirable and valuable. Being based in and facilitated by such a collaboration adds an additional layer to the panel, being an artefact of the kinds of collaborations under discussion. Through this overlap, the panel will not only present the findings and concerns of the papers of which it is constituted, but will also act as a forum for the discussion and problematization of art-science collaborations (and “science”-”applied science” collaborations) as a mode of producing and using knowledge within a higher educational context.

Session 1

650 “VISIBLE MENDING” AND THE ETHICS AND POETICS OF REPAIR IN HIGHER EDUCATION

Sanne Koevoets (Erasmus University)

This paper engages with the pedagogical and therapeutic potential of the ethics and poetics of “visible mending” as a practice of reparation, as students in higher education in The Netherlands in 2022 are working and living under conditions of increasing uncertainty, precarity, and pressure. Living in a global pandemic, students are expressing a sense of disappointment over the years during which their educational processes were ruptured.. Visible mending techniques such as darning, sashiko, embroidery etc. may serve as useful models – material metaphors, material practices – for students to re-engage with studying in a way that incorporates that which has been broken or lost, without covering up the systemic pressures that have led to the rupturing of their education.

Visible mending is a practice of restoring damaged or worn textile goods to a usable state, in such a way that the mend remains visible and becomes a new feature of the rehabilitated object. As in the Japanese art of kintsugi, the aim of visible mending is not to restore the object to its original state, or to hide that the object has been damaged. Instead, the reparation turns the object’s imperfection into a focal point, and makes it the starting point for its transformation and rehabilitation.

In the discourse on visible mending the therapeutic effects of reconnecting with generationally transmitted crafting techniques is commonly foregrounded. As a practice, visible mending may become a daily practice of what Anne Cvetkovich (2012) has called “the utopia of ordinary habit”. It is the combination of the ethics of sustainability and the poetics of visibility that insists on visible mending’s promise as a science-craft open to queer failure and feminist willfulness.

This paper explores how the ideas and practices of visible mending may be translated into a transdisciplinary pedagogical practice of rehabilitation and repair.

641 ON AGENCY AND ETHICS IN ARTS EDUCATION

Michelle Kasprzak (Willem de Kooning Academy, Rotterdam University of Applied Sciences)

The negative impact of values embedded in software and information technology has been thoroughly examined for decades (Moor 1985, Huff & Cooper 1987, Nissenbaum 1998). The questions of ethical engagement in art and design arose in parallel, prompted by reflection as art left fewer apparent physical traces with greater emphasis on performance, digital media, and relational practices (Bourriaud 1998).

While concerns around values and ethics in information technology may have centered on impacts for the user, and ethics in art and design may have also found a focus in engaging responsibly with audiences, clients, and participants, there is another level to consider within arts education. Part of the non-human turn (Grusin 2015) means that artists are now aware of a possible ethical consideration around relationships to non-human subjects, and this ethical awareness must be incorporated into the ways we teach emerging artists and designers.

One example that will be examined is the phenomenon of non-fungible tokens, or NFTs. These tokens are created using the blockchain, and many of the systems in use are massive consumers of energy. As educators of art and design, we would not hesitate to counsel a student to obtain informed consent from participants in their artworks or studies. Should we also add to this a consideration of our obligation to the non-human participants in their work, particularly when the effects are deleterious? What would be an ideal method for introducing notions of positive impact within a creative practice? What could models for teaching an ethical understanding of these complex relationships look like? One example of possible models from science which could be applied to an art and design context which will be discussed is the Lab Book (CLEAR 2021), a comprehensive guide and “living manual” to working in the Civic Laboratory for Environmental Action Research (CLEAR).

654 THE LIVING STATIONS: MATERIALIZE MATTER IN THE ANTHROPOCENE

Emma van der Leest (Willem de Kooning Academy, Rotterdam University of Applied Sciences) Aldje van Meer (Willem de Kooning Academy, Rotterdam University of Applied Sciences)

More designers and artists are designing with and for ecosystems, shifting away from ‘human-centered’ to ‘nature-inclusive’ design. The design of materials, products and recycling has never been so questioned and researched. How can we intervene and start working on possible alternatives that have positive impact on our environment and fits within the planetary boundaries? How do we prepare our students for the pressing problems our planet and society is facing? What does the toolkit of our (near) future design student look like?

In recent years, a great number of designers and companies started a new movement, the fourth industrial revolution: biofabrication. The term emerged from the field of regenerative medicine and is increasingly present in the product, food and material arenas. This field contributes to our understanding of complex living systems, including humans. Cross-disciplinary collaborations prompted by scientific research will only expand, propelled by global imperatives such as the urgency to develop cleaner technologies and the rise of do-it-yourself biology. The expert, amateur and artist are necessary to solve negative impact of our industrial revolution.

The Willem de Kooning Academy is developing a new research platform: the Living Stations, wherein we question material practice within arts and design and investigate how to collaborate with biological systems. From water to energy to reusing waste and implementing the smartness of specific organisms, the living stations will offer a learning environment where students materialize and contextualize ideas. This learning environment propels research through making.

The Living Stations is a dynamic environment that both exists in a physical and hybrid way – a biolab where students learn about biophilic and regenerative design and get acquainted with a range of organisms like fungal mycelium, algae and bacteria. The goal is to translate global complex issues - like ecological crises - into tangible local (educational) challenges.

644 TEACHING A SYSTEMS APPROACH IN DESIGN EDUCATION: APPLYING OR PROBLEMATIZING?

Ginger Coons (Willem de Kooning Academy, Rotterdam University of Applied Sciences)

What does it look like when designers and artists adopt the understandings and concepts of other fields? In both art-science collaborations, and in more day-to-day practices of art and design, methods and subjects from traditionally scientific or analytic disciplines are folded into the artist or designer’s work. This paper presents the example of an elective taught in a Dutch art and design academy, which brings a systems way of thinking into the context of artistic or designerly practice and reflection. The elective is the flattening of several different and complex understandings of systems into a method for doing design. The elective is one part of a larger research project in which the author of this paper, along with a group of teachers, attempted to port and apply a "systems view of the world" in(to) an art and design academy context, with all the conceptual losses that come along with that transfer/translation. Using an understanding of "systems" that starts from Gregory Bateson's observation that

“a ‘thing’” is impossible to study, as what is invariably at issue is not the thing itself, but the “infinite regress of relationships” (2000, p. 249), the elective was an attempt to teach design (and some art) students to think beyond the object, and understand the relationships and infrastructures (per Star, 1999) represented in the objects they both design and use. This paper reflects on the outcomes of the elective and addresses issues like: How can porting of concepts from one field to another avoid the trap of becoming instrumental? What insights can be found in the modes of applying versus problematizing? Can applying and problematizing happen at the same time? Does practical teaching of tools like flowcharts help art and design students problematize systems in their day-to-day lives?

646 THE SOCIAL ECOLOGY OF ART, SCIENCE AND TECHNOLOGY COLLABORATIONS: A Q-STUDY

Zeynep Birsel (Erasmus University)

Collaboration is a widely studied concept with theoretical underpinnings mostly in organization studies, public administration, social work, with limited focus on cultural and creative industries, where it is predominantly discussed in relation to innovation and policy. Collaboration is also investigated largely in science driven contexts such as team science, healthcare and sustainability. However, there is scant information on how we can conceptualize wide interdisciplinary interactions between artists, scientists and technologists, as well as on to what extent TD methods and practices are impacted by the purposeful integration of arts in the process. (Klein, 2017) Current study provides insights from an empirical angle focusing on lived experiences of collaboration between artists and scientists across diverse forms and motivations for engaging in across disciplinary work. Given that the art-science domain is extremely diversified in a way even resisting a unified term, the study focuses on the types of collaborations demonstrating a keen interest in critically approaching the relationship between scientific and or technological matter, its context and its function within society through creating boundary expanding, societally progressive at times even scientifically interesting works. (Bernstein, 2011, Wilson, 2002, Koek, 2019). The study investigates how we can conceptualize a shared ecology of collaboration involving art, science and technology as a form of trans or post-disciplinary creative and cultural practice. I aim to develop such conceptualization by investigating how artists, scientists and engineers experience collaboration, how agency for co-creation shifts between diverse epistemic cultures. Findings from this study are intended to contribute to our knowledge in methods, tools and approaches which can be further developed to facilitate and mediate meaningful collaborations across art and science. Initial findings focus on 6 themes that emerged as shared viewpoints characterizing the social constructs of art-science collaborations, which will be briefly discussed in the panel.

Room N108 - Closed Panel 027. YEARS OF CRISPR (2012-2022), THE RELEVANCE OF MULTIDISCIPLINARY APPROACHES AND THE RRI PERSPECTIVE: LESSONS LEARNED

Maria Almeida (Instituto de Ciências Biomédicas Abel Salazar (ICBAS))
Pedro Ramos (Instituto de Ciências Biomédicas Abel Salazar (ICBAS)) Instituto de Investigação e Inovação em Saúde (i3S)
Anna Olsson (Instituto de Investigação e Inovação em Saúde (i3S); Instituto de Ciências Biomédicas Abel Salazar (ICBAS))

At the forefront of genome editing, CRISPR technologies (in particular CRISPR-Cas9) rose as the most deployed technologies in research infrastructures transforming the whole field of genetic modification in the last decade. While resolving technicalities with clear impact in parameters such as safety and efficiency that are relevant for human therapy has been a mainstay, other issues of equally relevant magnitude have been raised by scholars and professionals in Science, Technology and Society studies (STS). These range between ethical, legal, regulatory and societal order when foreseeing the implementation of CRISPR technologies for scenarios of therapy and prevention of diseases in humans, animals and crops; impacts in crops productivity, in animal welfare and in physical and psychological characteristics of human adults and in humans still to be born. Many reports from policy-makers in ethics councils and advisory bodies at national and international level have also been issued since the technology earned frenzy attention following landmarks such as the first human germline interventions in embryos in 2015 and the birth of the first genome-edited human beings in 2018 evoking old themes from genetic modification such as enhancement of human beings and eugenics. In line with this, public attitudes towards genome editing and the need of broad societal engagement of stakeholders has been advised, requested and deemed as a necessary step to make sense of the use of CRISPR technologies and reflect in which applications should they be implemented and how they should be regulated.

The reflexive approach led by multiple stakeholders features at the core of Responsible Research and Innovation (RRI) framework and it is well-dressed of multidisciplinary approaches in relation to methodology and area of research. Both theoretical and empirical studies are equally relevant contributions from authors worldwide and serve to diagnose the status of CRISPR technologies and the field of genome editing in the basic and applied research. Moreover, transversal fields to biomedicine such as animal science, arts, sociology and communication provide an enlarged and diverse perspective to the ever-changing field of genetics with the aim to have an impact in anticipatory governance of genome editing with a holistic overview. As for the impacts in society, citizens deserve to be informed, consulted and integrated at the decision-making towards genome editing technologies and the interaction of actors involved in the different areas of knowledge may serve the purpose to reach such objective at a glocal level.

With this in mind, this panel intends to gather contributions from different knowledge domains with active research about genome editing aiming to reflect about issues in ethical, legal, regulatory and societal issues as well as about the dynamics of the research field at the time of the 10 years' anniversary of the initial publication on CRISPR and its potential as technology for genome editing.

Session 1

901 IRRESPONSIBILITY IN THE MAKING

Morgan Meyer (Mines Paris, PSL, CNRS)

In current discussions, human germline editing is often called 'irresponsible'. Looking at the international summits on human gene editing held in 2015 and in 2018 and the announcement by He Jiankui of the birth of two gene-edited babies in November 2018, this paper will analyse how 'irresponsible' research was the result of various (dis)qualifications and demarcations. Against a background of discussions of responsibility, an individual scientist was singled out, his experiments were scrutinized for their soundness, legality and safety and ethical and moral stances were questioned. These are features of a process that I will call 'irresponsibilization'. This irresponsibilization of research is entangled with calls for further action: Irresponsible research like that of He Jiankui should be contained, the veracity of knowledge claims needs to be confirmed, and institutions and decision-makers are called to act. The controversy turned 'irresponsible' into an active category, and rendered explicit its political, institutional and practical ramifications.

904 A RRI PERSPECTIVE ABOUT GENOME EDITING: TECHNICAL, ETHICAL AND SOCIETAL CHALLENGES OF CRISPR TECHNOLOGIES THROUGH THE LENS OF EXPERTS

Pedro Ramos (Instituto de Ciências Biomédicas Abel Salazar (ICBAS); Instituto de Investigação e Inovação em Saúde (i3S)) Maria Almeida (Instituto de Ciências Biomédicas Abel Salazar (ICBAS)) Anna Olsson (Instituto de Investigação e Inovação em Saúde (i3S)) Instituto de Ciências Biomédicas Abel Salazar (ICBAS)

Genome editing (GE) through CRISPR technologies (particularly CRISPR-Cas9) is shaping the way humans influence fields like medicine, agriculture and industrial biotechnology holding clear transformation potential. Access to these technologies facilitates personalized and preventive strategies, representing a promising tool for therapy when addressing different kinds of diseases. The development that makes widespread GE technologically advanced however, also makes the ethical and policy discussion urgent. It is of the utmost importance that the scientific community can interact with multiple stakeholders to promote awareness and discussion on the risk-benefit scenarios that GE applications might comprise. GE technologies merited the development of reports, guidelines, recommendations and legislative initiatives from internationally relevant bodies in respect to sensible topics such as intervention in human germline, somatic GE in the clinics as well as (non)-discrimination between GE and genetically-modified organisms (GMOs) in respect to human health, animal welfare and environment safety.

The present work reports on a project developed in the context of Responsible Research and Innovation (RRI), the European science policy for “co-creating the future with citizens and civil society organizations, and also bringing on board the widest possible diversity of actors that would not normally interact with each other, on matters of science and technology”.

It features within the Science, Technology and Society studies (STS) framework by emphasizing the reflexive approach of stakeholders belonging to the biomedical and animal science environments in basic and applied research. 22 researchers based in Europe, North and South America and China were interviewed and critically envisioned the potential, limitations and future applications of the technology. We will discuss their perspectives covering technical, ethical and societal challenges regarding human health and enhancement, animal welfare and, crossing of species boundaries in the process of embracing GE technologies by citizens in a time that marks the 10th anniversary of CRISPR’s initial publication

STUDENT VOLUNTEERS

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