

EASST

Review

European Association for the Study of Science and Technology



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A screenshot from the videoperformance Microbimpro, which handles improvisation, gut feelings and microbes dancing. Artist: Oona Leinovirtanen



EDITORIAL

EASST REVIEW EDITORIAL

Dear all,

The last issue of EASST Review began a necessary conversation on research cultures. The objective to open and analyse the field where most of us have been working for years is no easy feat. There is a lot of ground to cover, and it is not easy to be critical and constructive at the same time when so much is at stake. We therefore decided to give more space for the conversation to develop and so in the December 2023 issue of EASST Review, we continue the discussion. This issue has STS Live pieces that cover important topics that were left unattended in our previous issue: mentoring and decolonisation. We also have two contributions in the STS Multiple section, which illustrate ways in which STS communities try to develop spaces for sustained and sustainable, collegiate and heterogeneous forms of academic collaboration. We are satisfied with the way these two issues have opened up key areas for discussion. However, we want to remind all readers that EASST Review continues to be open, as it always has been, to discussing the challenges that STS faces in building welcoming and inclusive research cultures.

This issue also includes, sadly, another In Memoriam contribution dedicated to the passing of philosopher and historian of science Evelyn Fox Keller, whose contributions examined the relationship between gender and science, and whose insights into the importance of metaphor had a big impact in STS circles.

Only 6 months ago, we were proud to introduce Jose A. Cañada as a new member of the editorial board. After this issue, Jose will be the longest-serving member of the editorial team! The reason being that Niki Vermeulen and Sarah Schönbauer, who have been at the wheel of EASST Review since November 2020, will be stepping down after three years of fantastic work. Thank you! In their place, we have three new members of the editorial team who will join Jose in making sure the EASST Review continues to play its vital role in the STS community: Roos Hopman (Humboldt University Berlin/Museum für Naturkunde-Berlin), Stefan Laser (Ruhr University Bochum) and Richard Tutton (University of York).

Roos Hopman is a researcher between the Natural History Museum Berlin and the Humboldt University Berlin. In her work she spends a lot of time thinking about data practices, collections, and digital insects. Roos brings experience working in STS contexts in the Netherlands and Germany to the EASST Review, hoping to make space for the concerns of junior researchers especially.

Stefan Laser is a postdoctoral researcher with the Collaborative Research Centre Virtual Lifeworlds at Ruhr-University Bochum. He has a background in Sociology yet is firmly anchored in all things STS, until recently as a board member of stsing e.V. in Germany. In the EASST Review, Stefan focuses on early-career matters on the one hand and software and platform development on the other.

Richard Tutton is based in the Department of Sociology and co-directs the Science and Technology Studies Unit (SATSU) at the University of York. He has more than ten years' editorial experience at *New Genetics and Society* and from special issues of *Science as Culture*, *Sociology*, and *The Sociological Review*. He also serves on EASST Council, having been elected to a second term in 2022. His research interests span social studies of outer space and sociology of futures.

With this extended editorial team, bringing diverse experiences and insights to the table, we hope that EASST Review continues to provide relevant content to the STS community, while also increasing the Review's online presence, improving the functioning of the website and broadening its reader base. We look forward to this new phase in the history of EASST Review!

We end this editorial by reiterating our thanks to Niki and Sarah for all their work and thanking too James Besse. A special shout out goes to Niki Vermeulen. You kept it running (also when others e.g. went into parental leave, were sick) and your passion for the EASST community is inspiring to us and hopefully others as well. We cannot strengthen enough how important it was that you initiated the editorial team to keep the EASST Review alive. And not only this: you were always hands-on and have breathed new life into the review. Thanks for your commitment, your open eyes and ears and for steering the team from issue to issue. We also want to wholeheartedly thank Sarah for all her enthusiasm and creative contributions, bringing novel topics and perspectives to the EASST Review, including much-needed attention to precarious research careers and research culture more broadly and to the importance of environmental sustainability in STS, e.g. through the composition of a special issue on waste last year. They worked together with James Besse as editorial assistant, who has over the last three years carefully edited the many contributions and corrected our English language mistakes. We wish him all the very best for the final steps in the PhD process and on the new road afterwards.

Last but not least, we want to thank Anna Gonchar, who has played a central role behind the scenes of the EASST Review since 2015, being in charge of the layout of the pdf edition of the publication as well as the web edition. She is now dedicating her time to a PhD on the connections between press, politics and architecture in the Weimar Republic, with a case study on the architecture and curatorial concept of a press exhibition that took place in 1928 in Cologne. We wish her all the very best on the successful completion and thank her for her dedication to the EASST Review for so many years.

We hope you will enjoy reading this EASST Review and please do let us know if you want to contribute to the next edition, which will come out in Spring and before we all gather in Amsterdam in July.

With very best wishes from the editorial team

Jose A. Cañada, Roos Hopman, Stefan Laser, Sarah Schönbauer, Richard Tutton & Niki Vermeulen

IN MEMORIAM

EVELYN FOX KELLER (1936-2023)

Brigitte Nerlich



Evelyn Fox Keller. Nobel Conference XXXV at Gustavus Adolphus College October 5 and 6, 1999. From Wikipedia, [CC BY 3.0](#)

On 22 September 2023 [Evelyn Fox Keller](#) sadly passed away at the age of 87. She had been a theoretical physicist, a mathematical biologist, a feminist philosopher, a historian of science, and an inspiration to many across these fields. She integrated insights from all these fields creatively and critically, and, most importantly, she added some spice to this fusion of ideas by thinking very deeply about the role of metaphor in science.

Keller' work spans a large range of topics from mathematical models in biology to gender in science and society. However, metaphor runs through it all like a red thread. As the anthropologist Stefan Helmerich wrote in a 2020 [article](#) entitled "Not a metaphor": "In her early work, Keller was concerned to call attention to dominant metaphors about nature, bodies, and gender, and specifically those that figured the aims and practice of science as calculatively masculine while rendering nature as passively feminine."

Such early works were her 1983 book [A Feeling for the Organism](#), a biography of the geneticist Barbara McClintock, followed by [Reflections on Gender and Science](#) published in 1985 and a book containing more [essays](#) on language, gender and science which came out in 1992. I, personally, started to become interested in

Keller's work when she published her 1995 book *Refiguring Life: Metaphors of Twentieth-Century Biology*, followed by *The Century of the Gene* (2000), a book which tried to change how we talk about genes and genetic determinism, and *Making Sense of Life: Explaining Biological Development with Models, Metaphors, and Machines* (2002).

But Keller, a professor of science studies at MIT from 1992 onwards, was probably better known to students of Science and Technology Studies than metaphor scholars like me. Here one has to mention in particular a chapter "The origin, history, and politics of the subject called 'Gender and Science': A first person account", published in the 1995 *Handbook of Science and Technology Studies* and her article for the journal *Science, Technology and Human Values* entitled "Feminist Perspectives on Science Studies". Keller's work is cited several chapters in the 4th edition of the *Handbook of Science and Technology Studies*.

One of her last articles I read was her 2020 contribution to *Interdisciplinary Science Reviews* in which she discussed the "Cognitive functions of metaphor in the natural sciences". This was itself a contribution to a special issue entitled "Making Sense of Metaphor: Evelyn Fox Keller and commentators on language and science" – which echoes the title of one of her books *Making Sense of Life*. For anybody interested in metaphors and science her work was and is essential reading.

Metaphors are cognitive and communicational tools that allow us to confront the unknown with the known and to generate the better known. In her 2020 article, Keller stressed something that needs stressing over and over again, namely that metaphor "accrues its value in the instability it generates by confronting similarity with difference, insisting that man both is and is not a wolf" or, indeed, that genomes both are and are not books. This instability is the basis of a metaphor's vitality. Over time, metaphors lose that vitality. Where once they made us see the world afresh and kept our eyes open and alert, they can come to close our eyes to novelty and danger. This has great implications for science.

Keller wanted to find out how metaphors shape the way scientists see the world and the science they do and how some metaphors may make them blind to seeing things not highlighted by the metaphors once chosen by them in the past. She was particularly interested in studying this dynamic in the life sciences where rather static and linear metaphors might make it difficult to see and explore the dynamic nature of living systems.

I wish I had been able to read this 2020 article when I was writing an article also published in 2020 and entitled "Encounters between life and language" in which I called for a new language of life.

The beginning of that piece focused on a seminal encounter between the anthropologist Claude Lévi-Strauss, the molecular biologist François Jacob, the linguist Roman Jakobson and the geneticist Philippe L'Héritier during a televised debate entitled "Vivre et parler" or "Living and speaking", in Paris in 1967 (see Lily Kay's seminal analysis [here](#)). This was the time when all the dominant, and now troubling, metaphors for genes and genomes had emerged; those of the code, the map, the book, the blueprint, the programme and were used across disciplines. These metaphors were incredibly useful at the time for inspiring novel thinking about life and language, but their usefulness has somewhat unravelled over time, an unravelling that Keller has meticulously observed and dissected.

At the end of my article I asked whether, given that the life sciences are increasingly embracing complexity, flexibility and even randomness and chance, one should perhaps try to organise another encounter between biologists, linguists, anthropologists, science writers and communicators and others to talk through linguistic difficulties, past and present, and linguistic opportunities, present and future before some other troubling metaphors emerge? Such an encounter is well overdue, but if ever it was organised, one important participant would now be missing: Evelyn Fox Keller.

As early as 2005, she had [called](#) for the construction of “a more appropriate linguistic framework” for the life sciences, building on the emergence of a “new lexicon” which is itself grounded in an emerging new theoretical framework that shifts the focus of research to “the dynamic interactivity of living systems”.

It would have been great to have Keller’s thoughts on recent developments in the life sciences, summarised eloquently in a [book](#) by science writer Philip Ball entitled *How Life Works: A User’s Guide to the New Biology*, published on 7 November 2023. In this book Ball deals not only with the noise, fluidity, fuzziness and complexities of life, which are becoming an increasing focus of biological research, but also, inspired in part by Keller’s work, with the dangers still posed by some popular narratives about genes and genetics. When it comes to the study of life, things are changing in science and in language and I think Keller would have loved that.

Brigitte Nerlich is Professor Emeritus of Science, Language, and Society in the Institute of Science and Society at the University of Nottingham in the UK. Her current research focuses on the cultural and political contexts in which metaphors and other framing devices are used in public, policy and scientific debates about infectious diseases, emerging technologies and climate change.

An earlier version of this article was published on the University of Nottingham’s [research blog](#) on 25 September 2023.

STS LIVE / RESEARCH CULTURES

WHOSE JOB IS IT ANYWAYS??: DECOLONIZATION AS ETHICS IN EUROPEAN STS

Jacqueline Ashkin & Efe Cengiz

IN OUR EXPERIENCE, MANY EUROPEAN STS SCHOLARS VIEW DECOLONIAL EFFORTS AS A GOOD ADDITION TO - BUT NOT A CORE VALUE OF - THEIR RESEARCH PRACTICE. REDUCED TO AN ETHICS OF CHECK-LISTING, DECOLONIZATION REMAINS LARGELY PERFORMATIVE, RATHER THAN ACTIVELY COLLABORATIVE, DIZZYING, AND FUNDAMENTALLY REFLEXIVE. IN THIS SHORT ESSAY, WE EXPLORE WHO SHOULD BE RESPONSIBLE AND WHO IS HELD ACCOUNTABLE FOR DECOLONIZING RESEARCH PRACTICES AND CULTURES. WE ARGUE THAT STAYING WITH THE TROUBLE OF DECOLONIZATION IN STS REQUIRES AN ETHICS OF CONSTANT REFOCUSING (YOUR PRACTICE) AND RENEGOTIATING (WITH COLLABORATORS).

It has now been more than a decade since Tuck & Yang (2012) explained that decolonization is not a metaphor. But if it's not a metaphor, what exactly is it? It seems to us that most European STS scholars have little, if any, idea. And those that do, are either unable or unwilling to act upon it. We argue that this does not stem from ignorance, but an ethical and knowledgeable choice, to let decolonization stay confined exactly to the metaphor scholars of the Other attempt to break out of. While we know and appreciate that there is no uniform "European STS Scholar", there is an idea(l) of one, delivered with and by an epistemic culture which struggles to confront otherness as simultaneously an ontological and theoretical condition.

Decolonization isn't land acknowledgement - Europe is not land stolen from indigenous peoples (or so the story goes). Is it including more diverse case studies? It could be, so long as it does not require any active commitment to produce an institutional shift which would make 'doing decolonization' an uncomfortable endeavor. Is it engaging with thinkers and literature from beyond the English canon? In a discipline like STS, which prides itself on not really having a set canon or not really being a discipline, wouldn't this be easy? It should be. But in our experience as young scholars from the fringes of the colonizing world, we see many of our senior colleagues treating decolonization as an afterthought, a cherry on top of an otherwise complete piece of research. Like the "Best Regards" at the ends of emails containing the really important stuff, the language of decolonization is expressed as a spectacle of niceness. As with the pleasantries in a steadily growing chain of emails, sometimes even this performative act disappears without a thought to whether its dismissal results in the loss of anything valuable.

We think this is in part because scholars do not know where to locate the work of decolonizing. One author was asked by a colleague for suggestions on who to collaborate with in their home country, with little curiosity about why they had chosen to leave that context in the first place. The other author is often asked why they are primarily interested in conducting research in and about their home country and lack interest in other national contexts. You might want to respond by saying these are genuine questions, or that these questions are indicators of casual racism more than anything; but they are not value-free to the receiver of those questions, i.e. the Other scholar, especially when received at regular intervals. We feel

obliged to help you understand – more than anything, we want you to understand the complexities through which our existence as both people and scholars emerges. But it is exhausting. The desire of European scholarship operates exactly in the way to place and pin the Other scholar between a rock and a hard place. “They” must be willing and interested in becoming “like” the European scholar, demonstrating their dedicated care-work in institutional and national settings they are often only precariously tied to, yet never to the point that they may act as if they actually belong. An eternal approach is reserved for the Other; but never arrival. Keep becoming but never be. This is what Frantz Fanon already described in the 1960s as the conundrum of the colonized intellectual: they come to mediate the relation between colonizer and colonized, attempting to prove the value of their otherness and, in doing so, reinforcing the colonial project. For Fanon, decolonizing the intellectual begins with re-orienting the knowledge-making endeavor away from oppressive institutions and towards the concerns of the oppressed.

Offhand comments like the above, casual as they may be, reinforce a cherry-on-top mentality towards decolonization, one where scholars of European origin have a choice to engage with international contexts – often to great fanfare and benefit to their personal career trajectories – while those who are coded as Other simply must. It is what is expected of them. To further complicate things (or rather, to begin complicating them), our aversion to a “cherry on top” approach to decolonization specifically comes from the importance we place upon it; a “we” which includes you, until it comes to place your own hands under the rubble and lift. In this division of labor, decolonizing research practices is a choice for some and an obligation for others. It shunts extra labor onto people who are already fighting to persist in a system that is explicitly not designed for them. To rephrase Gayatri Chakravorty Spivak’s eminent essay, “Can the subaltern decide what to speak about without it becoming a whole thing?” is the new question of our times. In these interactions in the west, our affiliations with the ‘rest’ are casually interpreted as forms of expertise, free of sociopolitical entanglement because, well: you’re here, aren’t you? This is at its core what Sara Ahmed refers to as ‘stranger making’ in her work on diversity in higher education, pointing to the ways in which ‘some more than others will be at home in institutions that assume certain bodies as their norm’ (2012: 3).

Surprisingly, despite their attention to dissecting norms in their empirical work, European STS scholars appear less inclined to similar interrogations of their home turf, the university. Both authors have been told that if decolonization is what they wish to bring about, perhaps a doctorate in STS is not the best way to go about it. If the context of European STS scholarship will only speak of, but never begin the task of doing decolonization, perhaps it itself is “not the best way to go about” scholarship. What we hear is that Otherness is what we deal with “out there” in the world rather than “in here” in the academy. We find these comments especially alarming because of the history of STS: countering universalist claims and contesting reductive, essentializing ways of knowing the world have long been at the heart of key contributions from the discipline. Part of the challenge is that, as Linda Tuhiwai Smith (2007) writes, the very conditions for western epistemology are themselves colonial. Practices of collecting, which often set indigenous peoples alongside woven baskets and plant specimens, rendered certain types of bodies as objects rather than subjects of knowledge. To undo this move – to make the Other body as a subject – collapses the project for superiority that justifies the colonial interventions which still order our world today. Indeed, as Edward Said points out, this curatorial work is highly selective, cannibalizing otherness to strategically incorporate it into a teleology of Western knowing that maintains the status of the Other as an object in need of guidance at best, control at worst.

Of course, many of the arguments we make will be familiar to the reader. While we are here more concerned with the practice of decolonization and decolonizing practice (like good STS-ers), we cannot write about decolonization without discussing citational politics. Thinkers such as Achille Mbembe and Boaventura

de Sousa Santos have written extensively about how to go about decolonizing Western research epistemologies, pointing to the intricate entanglements between colonial, capitalist, and patriarchal domination. Zoe Todd, in their seminal essay 'Ontology is just another word for colonialism' (2016), points out that when choosing to cite white men over thinkers emerging from other histories and geographies, white men become an obligatory passage point in the generation of legitimate scholarly thought. But this is true also outside of the written word. The problem is that in many contexts *outside of the west*, whiteness and maleness remain important markers of legitimacy and authority. "We" are not granted the same access to "ourselves" without it. We don't need European scholars to abandon the Other in the name of decolonization; what we do need is an experimental allyship, an 'ethical relationality' (c.f. Donald 2012) predicated on thinking-together about how we can best mobilize the prestige and authority of western institutions to decolonial ends.

All this calls into question what exactly it is we mean when we talk about ethics. Ethics Boards still expect the Other scholar to do their work on the Other within the ethical confines set for the context of the European Institution. Checklist ethics of, for example, "not including vulnerable populations" or "people engaged in criminal activities", do not make sense when producing research on regions where everyone is vulnerable and vulnerable especially to the Law. Rather than just one step in the process, then, we ask STS scholars to incorporate an ethics of decolonizing into their entire research trajectory. We do not need spectacles of decolonization. Spectacles of liberation have served nothing but the interests of those scholars who would like to write about the world as it is. Without an actual interest in refusing the as-is, the European scholar need not contribute to a program that necessitates their loss of power. The mythical position of the neutral observer is no longer – or rather, has long failed to be – an ethical position.

Building on what Donald (2012) calls an 'ethical relationality', we argue that staying with the trouble of decolonization in STS requires an ethics of constant refocusing of research practices and renegotiating with interlocutors and collaborators. It demands a criminal relation (c.f. Moten & Harney 2004) to research institutions and the formation of new lines of solidarity across colonially imposed boundaries. It asks scholars in positions of power to be mindful of the ways they mentor and make space for those most precarious dissenting voices in their networks. Decolonization is by definition most uncomfortable for those with the most power to take definitive action. It will not feel like winning; it will not always be a success story; it will, necessarily, not always benefit you. But just as it is not "our" responsibility to make sure "you" are decolonizing the academy, it is not "your" responsibility to ensure that "we" succeed. The fact that we still have to produce an "us" connected only in our exploitation and otherness speaks volumes (Fanon, again, wrote about this phenomenon some fifty years ago). Decolonization is a practice that needs room to fail. That is part of the beauty and the hazard of genuinely collaborative relations - they don't always work out. This does not make them any less worthwhile. Demanding immediate outcomes is the perfectionist pitfall, an impediment to the messiness and dizziness of genuine transformation. Decolonization is not a metaphor, but it is a trouble to stay with, a constant effort at reflexively engaging with and restructuring research. Fanon called this the process of replacing concept with muscle (2004[1961]: 157). We must transition from Haraway's (2016) notion of tentacular thinking into a mode of tentacular doing, the feeling and testing out of ways to do research otherwise. To offer a step-by-step guide would once again make decolonization "our" task and "your" pastime, so instead we ask: if the doing is not your job, then whose job is it anyways?

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Efe Cengiz (he/him) is a PhD researcher at University of Groningen, Campus Fryslan. His work concerns the epistemic, ecological and socioeconomic injustices and more-than-human futures in the making in olive groves of Turkey's Aegean region. He has a bachelor's degree in Sociology (Middle East Technical University) and a master's degree in STS (Goethe University Frankfurt). He's also a board member of WTMC (Netherlands Graduate Research School of Science, Technology and Modern Culture) and an editor of metapolitik.net; a political theory e-zine.

TAKING AND LEAVING: COMPLICATING THE RELATIONSHIP BETWEEN EXTRACTION AND ETHNOGRAPHY

Sarah Rose Bieszczad, Efe Cengiz, Viliina Kaikkonen, Sofie Kronberger, Rhys Anil Madden, Ricardo Paris, Juan Antonio Samper, Lea Marie Sasse

Authors in alphabetical order.

INTRODUCTION

What exactly is extraction? How does it relate to extractivism? What does ethnography bring to the study of extraction, and how might our own ethnographic practices be extractive?

In April 2023, the course “Extraction Ethnographies” offered a space to critically reflect on these questions. Organized through a collaboration between the Department of International Environment and Development Studies (NMBU) and the TIK Centre for Technology, Innovation, and Culture at the University of Oslo, the course brought together researchers across various scholarly fields. It was organized by Susanne Bauer, Ana Delgado Aleman, Esben Leifsen, Suzanna Sawyer, Tahani Nadim, Manuel Tironi and Beth Anwyl Roberts, and hosted 15 participating PhD students and post-doctoral researchers. Together our research spanned many different objects and forms of extraction, from resources such as copper, seagrass, aluminum, olives and sound, to differing processes of mineral, deep sea or data mining, to name a few.

Interdisciplinary conversations are always a challenge, and their success is not always given. In the case of the workshop, however, the variety of research foci and scholarly disciplines led to rich, inspiring and intense conversations, which were framed by the structure of the course. Each day facilitated new conversations around “extraction practices”: Collecting; Leaving Behind; Displacing and Re-Siting; and Transforming and Storing. And while the mining of genetic data might at first glance not have much in common with aluminum, focusing on these key verbs prompted a deeper understanding of the generative character of extractive efforts – their temporalities and promises, the relations that they allow for and exclude, their inherent understandings of what is of value, what counts as knowledge, and what is granted care.

One of the main goals was to open understandings of extraction through the exploration of multiple knowings and engagements with concepts that already have a rich history in social science research. The course explored possibilities of ethnographic precautions – ethnographic encounters that do not take for granted what kind of relations and practices form around processes and sites of extraction. Through the focus on concrete forms of extractions, rather than black-boxing meanings of extractivism, the course conveners encouraged engaging with questions of political ecology and economy in a situated way. The diversity of ethnographic cases and backgrounds in the course helped shake up preconceptions of extraction and presumed categories.

The partner to this precaution was imagination, as participants presented on each others’ work-in-progress throughout the week, wondering how the picture might differ when multiple ways of thinking about extraction are considered. These conversations were not limited to the classrooms of TIK and NMBU, but extended into the shared activity of collecting materials along the coast and forests of Hovedøya island, in conversation with guests such as Guy Kastler from La Via Campesina, and while walking together through the city of Oslo.

We did not (and did not want to) find one defining definition of extraction ethnographies. Instead what emerged were the many possibilities of ethnographies of extraction. In moving beyond top-down expectations of what extraction is, they can respond to the variety of processes and relations that are constituted as extractive in particular social settings. They might touch on the present-day effects of future anticipated extraction, even if it does not materialize, or the long-term consequences of living with the waste or absence that extraction leaves behind. The scope of possibility widens further when what is extracted can be so different, from the physical to the digital, and from the small scale to the large industrial.

This collaborative piece continues the conversations of our time together in Oslo, and stays with the moments of Collecting, Leaving Behind, Displacing and Re-Siting, and Transforming and Storing. These sections suggest different ways of entering into an ethnographic study of extraction, but also reflect our various voices and ideas, as we have written individually from what continues to stand out to us moving on from the course. By keeping these differences visible we hope to do justice to the imaginative breadth and depth of the course, and waymark the many avenues that continue to draw us onwards.

COLLECTING

Collecting was the first verb that oriented our course and started the discussion on extraction and extractivism. To do this we headed to Hovedøya, a small island in the Oslofjord. While it is hard to say when and where extraction starts, collecting seems to be one of the first steps in the extraction process. And this is how our workshop began, guided by Ana Delgado Aleman and Tahani, we collected rocks and photographs, a Bacardi Breezer cap and bird songs, a rusty nail and, by accident, a forbidden flower. Some of the first questions we encountered were: When does collection become accumulation? At what point does extraction become extractivism? Could there be moments wherein collection and extraction are practices of care? How does the act of collecting transform what is collected?

Collection is an essential part of scientific endeavors to be sure. We reflected on how we as researchers have indeed collected a lot, both materially and symbolically: data, samples, information, relations, colleagues, tokens, memories, and recordings, just to name a few. We collected these things through various methods: active listening, recording, observing, sampling, even accidentally noticing things as we become distracted by smells, sights, overheard fragments. The process of collecting to us seemed endless and unbound – could everything be seen as collecting in the end?

One discussion that helped to ground us was thinking of how collection is always connected to classification. Instead of defining what collection is (whether an intentional process or not), focusing on what we do with things once collected orients us back to the transformative nature of collecting and focus on questions of: what is made through the collecting and classifying process? What impacts arise therefrom? Why do we collect certain things and leave others behind?

This prompts us to think about the interests behind the acts of collecting and extracting, and the ways in which they are reproduced and rendered legitimate. An awareness of the ways that link collecting and classification enables us to ask about opinions and experiences that do not fit with the dominant narrative of extraction in a given context, that might resist or be hidden. It also gives us cause to reflect on the relationships and reasons that frame our own collecting practices.

LEAVING BEHIND

The first thought when reflecting upon extractions and extractive activities is the negative impact of what is left after the act occurred. Beyond good or bad

intentions, financial sources, drivers or aims, every act on nature is not neutral. We, as researchers, understanding ourselves also as extractors, were confronted with a sharing degree of responsibility for what is left behind.

From the group experiences, and inspired by Esben Leifsen's (2017) work on copper mining and Suzana Sawyer's (2004) on oil extraction in Amazon, we discussed the primal brute materiality of waste and by-products in the form of pollution, dust, toxic materials, mercury, and many others. Extraction leaves behind disturbances, turbid waters, wasted land, and scars in landscapes and bodies. As previously reflected in the process of collection, extraction leaves behind a void, an empty space of what once was. And from these ghostly marks of existences and activities, we, as researchers, pursue the trail of its traces.

Extraction entails breaking up relations – physical, symbolic, social, territorial – but we asked ourselves, are all broken relations necessarily harmful? Moreover, can the traces of an ethnographer extracting her research materials also be potential for new forms of affection among people and things that were left behind?

There is no de-territorialization without a re-territorialization, thus, *leaving behind*, as we are hitherto stating, expresses itself an arrogance of extracting the agency and potential of what is/was (t)here. Things, peoples, and systems are not just left, they are reconstructed from interactions, expectations, conflicts, embodiments, and renewed capacities. Thus, the ethnographer may carry the responsibility of building a new ethic of displacement through her practices and relations in the field. Because of this, working in extractive contexts can often be emotionally challenging, with consequences for how we consider ethical responsibilities to others and to ourselves – the support we build around us is important.

DISPLACING AND RE-SITING

The day began with a conversation with Manuel Tironi and Susanne Bauer regarding the extraction and circulation of various types of materials and data that guided the subsequent discussions. Displacing and re-siting are often understood through the movement of objects from and to stationary landscapes. Extraction, after all, brings forth most commonly an excavator in mind, digging for something, some resource, that will become part of global supply chains. Resources are taken away, processed, sold, used, discarded, picked up again as waste, processed again and then repurposed or burned, where often the cycle begins again.

However, following Susanne Bauer's work on technoscientific displacements of salmon-biology (forthcoming) and Manuel Tironi's (2020, 2022) work on alternative knowledge practices to think geology beyond extractivism and technocracy (Tironi), it becomes clear that extraction often sees necessary the displacements, re-sitings and destruction of existing epistemic systems as much as it relies on systems of knowledge that justify them. Thus, displacement can be considered as more than just these series of movements of the displaced object. Extracting the object for circulation necessitates cutting the object free from its entanglements with once familiar human and non-human actors, objects and locations. Alienation precedes this movement. Alienation; but not of the object alone, also of the landscape, of its previous residence and the meaning and knowledge-making practices that are "of" the said landscape. Displacing, for example, a string from a guitar, still 'leaves behind' what is essentially a guitar. It can be played still, but not the same way.

As ethnographers, we are not only witnesses, but we actively take part in the displacement and re-siting of knowledge as well, transforming it into stories, theories, reprehension or praise, and, in the end, also into our social capital. Transforming and re-siting knowledge is our academic bread and butter, and we are practicing within the traditions and colonial histories of displacing and re-siting knowledge. How then, can we assure that the knowledge we take honors and takes seriously the epistemic communities who share it with us?

Villagers in the Aegean coast of Turkey gather the olive fruits from groves surrounding their villages. In online forums worldwide, people who rely on biomedical objects gather online to help each other in hacking and re-configuring their devices on their own terms. Neither of them seem to have anything to do with extraction, displacement, or with each other. The Extraction Ethnographies Workshop allowed us to discover how shifting a landscape of collaborative subsistence to one of accumulation can be considered as a form of extraction; no matter if it looks like a heavily mechanized industrial olive orchard, or a medical device whose inner workings and data collections are hidden behind access restrictions. No villager is displaced from their village physically. Patients still own their medical devices. Yet epistemologically villagers and patients are all displaced when subsistence farming gets branded as being uncaring and unknowing and biomedical companies declare users unfit to know their own bodies and the devices they rely on and interact with day by day. Alienated objects, landscapes, knowers; an alienated mess, ready for re-siting.

This displacement is often made invisible, rendering local knowledge systems as non-existent, inefficient, or naive. But displacement is necessary for the extraction that follows. The argument that there is no de-territorialisation without re-territorialisation points us to the actively shifting status of a “behind” that is often easily disregarded. Applied to displacement and re-siting, this argument must make us aware of how the landscape of the object is also displaced. As meaning and knowledge-making practices are necessarily contextual, the displacement of the landscape displaces them as well. Be it the transformation of olive fruits to cash crops and the attempts to get better yields every year, or the replacement of patients’ embodied knowledge with data-collecting algorithms as credible knowers. By displacing the epistemic communities from the entanglements they live in, extraction re-sites them in sites where they are no longer knowers but users and meritless laborers. Being then branded as never-having-known, as not credible, we argue that it is necessary to be aware of how epistemic knowledge systems are made to exclude and discredit.

We as ethnographers too are practicing within traditions of displacing and re-siting knowledge. The people we interact with are often quite aware of this. Attempting to gain insight on the practices of villagers in olive orchards, one ethnographer receives questions as answers: “Why did your professors send you here? What do the Dutch want to do with our olives, it won’t grow there, why do they care? If they want to learn how to control us, do not share our knowledge with them. Don’t spy.” As he now shares this with you, which entanglements did he rip this statement from, to re-site it here as a quote to grab your attention and convince you of his points? We need to do the humbling work of reflexivity and become aware of the extractive efforts we ourselves perform; not to stop producing knowledge, but to make sure we are not leaving behind (producing through our work) incompetent knowers who rely on our chauvinistic intellectual works to survive(!).

TRANSFORMING AND STORING

In many extractive activities, the primary objective is to transform the extracted material into a private and thus marketable commodity. According to Richardson and Weszkalnys (2014), resource extraction starts with abstractions taking place on both the material and conceptual level. On the material level, this encompasses various steps in commodity chains, including refining and smelting processes, through which the materials (trans)form. On the conceptual level, through acts of naming, classification, mapping, and such, the extracted material is represented in a standardized form, fostering its capacity for global market exchange. Thanks to these multiple processes of abstraction, resources have come to be perceived as given, waiting there to be extracted. Through these cultural and social processes of commodification, moments of economic value creation occur, taking something that is understood as valuable while other materials are sacrificed or become waste.

From this starting point it was clear that transforming and storing are never just physical stages in the process of extraction, they have consequences for the way in which relations between actors are constituted or challenged. One way we thought about these verbs was through discussion with Suzana Sawyer on the class-action suit against Chevron in Ecuador (see Sawyer 2022). In talking about the numerous transformations which oil undergoes to be extracted, we considered how these chemical processes were further leveraged to create certain legal truths and exclude others. Similarly, Ana Delgado's work on sequence data in bioprospecting shows how the transformation of extracted microbes into data challenges ideas of state sovereignty (see Delgado 2021), while Susanne Bauer (2014) shows how a data archive of the population in Denmark encouraged the formation of specific relationships between science, citizens and the state.

Storing and different modes of containment are critical too, as leakage and contaminants become evidence used to challenge extractive industries. As Manuel Tironi details in Puchuncaví, caring for bodies and homes transformed by toxicity is a political action that makes industrial harm visible (see Tironi 2018). Ethnographic examples further illustrate how such processes of transformation and storage cannot be considered independently of the spatial configurations that they are a part of. They unfold and impact differently across locations, including destruction, environmental injustices and violence. Here, the lens of sacrifice zones becomes essential, "interrupting narratives of frictionless transformation, including hegemonic imaginaries of global growth, trade and development" (Reinert, 2018).

In the context of ethnography, the dispersed spatiality of material flows presents challenges to conventional place-based ethnographic approaches. Consequently, ethnographers have explored alternative ethnographic methods, such as multi-sited ethnography, which centers on a particular process or entity (such as a mineral) and follows its journey through space and time. Using materials as an organizing principle, multi-sited ethnographies can shed light on how objects and social lives are entwined and how different forms of extraction transform and connect landscapes, places, and territories.



Kopytoff (1986) sees materials or objects as having their biography, with cultural meanings and social processes in their life history. Objects can be moved to localities and get stuck there, but this is not a permanent condition. The set of relations in which an object is embedded transforms with its storage and in many moments after, as in Tahani Nadim's (2021) analysis of the datafication of natural history collections. Alternate ways of relating can be re-activated at a later date, as with the restitution of looted objects, or the leaking of contaminants that become politically charged. Data too can leak, with transformative effects as it leaves storage and circulates in the world. Thinking about transformation and storage means that collection and use are not the only ways to understand data extraction, but also the messiness of data manipulation and sharing, personnel and system change, and leakage through whistle-blowing or hacking, to name a few. What happens to different forms of storing and containing in the future is often uncertain, whether these will be abandoned at some point.

If extraction is just one stage in ongoing transformations that continue to have effects, then the anticipation of future extraction can itself have transformative effects – a concept that draws from the work of Gisa Weszkalnys (2014, 2015) and holds relevance for many of our field sites. These effects encompass the formulation of concrete plans, realization of studies and assessments, and the construction of infrastructure. In doing so, they not only set the stage for forthcoming transformations/developments/extractions by creating requisite material conditions, but also shape the ways of thinking about extraction. This extended timeline has consequences for our practice of ethnography too, as the anticipation and after-life of our research should be considered as much as the moment of collecting.

In taking transformation and storage as its entry point, an ethnography of extraction therefore moves away from extraction as it first comes to mind to look at the minute and meaningful steps in between. In doing so it can challenge the simplicity of process that is often used to justify industrial extraction, that oil (or some other resource) is simply sitting under the surface ready to be lifted out. Furthermore, these verbs draw attention to how people are thinking about time and the temporalities of extraction, raising questions on how extraction begins, when it might end, what its effects now and later might be, and how these concerns for the future impact upon ways of relating in the present.

ENDING

As a final reflection for this text we decided to include an additional practice related both to the topics of extraction and ethnography, as well as to reflect about the course: Ending. One of the most meaningful things that the ending of the course led to was this very exercise. But in all its breadth, the word surely opened many avenues for reflection during the discussions that we held after the end of the course. A general sentiment was that one end of the course was to question ourselves whether there is a line to be drawn between extraction and extractivism, and, by implication, between collection and accumulation, storing and confiscating, and leaving behind and throwing away.

These reflections relate also to our ongoing efforts to conduct academic work in a less extractive way. The extraction ethnographies course has largely stayed with us because it was kind. From the beginning it was structured to encourage learning from each other, experimenting with new ways of thinking, and cultivating modes of sharing and relating as equals. In writing together we have tried to continue that respect for difference and each other's voices. Doing so has involved returning to similar concepts with our different inflections, kaleidoscopically shifting into a mutual view of everything extraction ethnographies can mean. But, in closing, we return to a single voice, as Juan Antonio Samper leads on final thoughts that demonstrate the depth of change in our own individual thinking.

A main takeaway of the course was the difference between extraction and extractivism. The course helped me clarify certain concepts (extraction/extractivism) and gave me ideas regarding how to approach extraction/extractivist practices or processes through ethnography – the focus on different verbs/actions was especially helpful. Additionally, it made me reflect on things and processes (connections, transformations, infrastructures, displacements, etc.) that are connected but not limited to the most obvious extractivist practices.

Looking at these different things that can be extracted and, thus, potentially be extractivistic in nature, I believe helps think through the concepts and give them a richness by adding complexity. The presentations of other people's fieldwork, and subsequent discussions, made me reconsider so many activities I have been observing in my own field site. There is a lot which I hadn't considered as extraction before. But breaking down what extraction can be into its possible constituents, like 'Displacing and re-siting', had me writing notes in margins throughout the week, questioning how it might fit with what I have seen.

I began thinking that extraction doesn't seem to carry the same normative weight as extractivism does; that extraction is one of many quintessentially human practices one could name. Extraction of gold, for example, happened in Latin America long before the conquest. I thought this nuance could bring some analytical wealth to a study of extraction. But now I wonder, does it matter to make the difference in a capitalist world? To what extent is the end of an extraction ethnography to end extractivism? Is this the point of making a difference between extraction and extractivism? Is it not the extraction of labor and resources, these unbalanced cycles of production that exhaust a territory's life-generating relations, at the very base of capitalist relations? Is theorizing about the difference between extraction and extractivism useful for an emancipatory anticapitalist struggle? I feel that a general doubt is developing within me. But that is not the same as to say that this conceptual nuance is meaningless, for it may help in the making of fairer collaborations in research, reflective collection of data, or in understanding some things about the movement of people, for example. The week we spent in the unnaturally warm Oslo spring, shuffling around, getting lost and disoriented in the many ways extraction applies to many different contexts, allowed me to experience a break in my thinking process; allowing me to understand extraction as much more than colonial and/or capitalist movement of resources, but a shifting of sites, meanings and entanglements of more-than-human lives in the production of locations, tools, and doers of extraction.

During the summer after the course there was a case that is related in some ways to ending and which received a fair share of media attention. The news story was that the Smithsonian museum still had the remains of the bodies of the ancestors of indigenous peoples that, years before, had been collected without consent from the graves they laid in, transformed into data, re-sited and stored in museum collections, leaving behind everything that comes with the defilement graves. In the end, the bodies were displaced to basements that serve as museum archives, along with a universe of symbolically charged objects that those who remember and worship them must ask permission to a museum to access.

This case really puts the finger on the metaphoric blister when it comes to reflecting about the end and the ends of research. But it also invited me to ponder about the importance of ending research with a similar rigor that is more or less ubiquitous nowadays when it comes to beginning research. Just as identifying the end of a course was crucial in the endeavor of writing these lines, identifying the end of an extraction ethnography might be crucial

for specific endeavors most likely including the people who participate and the territories they take place in. At some point in the course, I appreciated a definition of ethnography, of the many that were shared during the first session, that put an emphasis on writing as part of the ethnography. There is a connection between that definition and the point I am attempting to deliver. The end of the ethnography might be after writing it, but what is done with the writing and the writing materials gains importance in the end. What is it used for? By whom? Where? I am sure that there are different ways of valuing the work that comes out of an ethnography and that not every researcher has the same normative stance (be that implicit or explicitly), but ending by asking such questions is not only what initiated this exercise, it also was an entire half of the problem in the Smithsonian case and perhaps in any scholarly endeavor.

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THE VALLEY OF SHADOWS: A NOTE ON MISSING GUIDANCE DURING THE POSTDOC YEARS

Endre Dányi

I was recently asked to write a short piece for *The EASST Review* about mentoring and supervision. At first I thought I'd compose a note on the PhD process, the importance of letting go of being a good student, and the complications that may arise along the way. But then I realised most PhD students already know all of that – thankfully, in academia in general and in STS in particular there are several mentoring schemes aimed at making doctoral life more manageable. Needless to say, such schemes don't make doctoral life easy – but at least the difficulties are more recognisable today than, let's say, a decade ago. What is generally missing, however, is guidance for the postdoctoral years, which therefore may feel like a journey through 'the valley of shadows'. While my short contribution cannot make up for that missing guidance, hopefully it can identify some themes that are worth considering, both for postdocs and for those who employ them.

Let me start by stating the obvious: the idea that one's academic training is over the moment one receives their doctoral degree is a fantasy. Of course, things work differently in different places, but most people I know had to jump from one postdoc position to the other for several years before they got a faculty position – or decided to leave academia entirely. The lack of security or a clear perspective during the postdoc years is one thing; the lack of information about the skills and experiences that are required to navigate that space is another. Here I want to focus on the latter.

Teaching. Although many postdoc positions are situated within research projects, it's not uncommon for new postdocs to be asked to teach as part of their new job. Even if they aren't, it makes sense for them to offer a course or two, as it greatly increases their future employability. (Sorry about the language.) This often takes a lot of time and effort: designing new courses from scratch is hard work, and teaching them well requires practice. Teaching training programmes are helpful, and higher education certificates come in handy, but many employers see them as a waste of (their) time. So, there is likely to be tension.

Research. New postdocs are understandably proud of their achievements and tend to be busy publishing their doctoral theses as a book or a series of articles. (This is often also an explicit requirement to receive their degree.) At the same time, they are expected to start working on their new research, either within an externally funded project or at a department (as a grant proposal, for instance). There is likely to be more tension between the need to make the 'old' research visible and to focus on the new one (which often requires learning other methods, entering unknown fields, etc.).

Administration. Some postdoc positions are associated with the establishment of a new research centre, others are embedded within already existing departments or other academic units. Irrespective of the environment, for most postdocs this is the first time they are confronted with the internal politics of their institution – and it tends to be ugly. There's often a shortage of funding and other resources, which might generate petty clashes among otherwise amicable colleagues. In addition, there might be difficult personalities, bad academic habits, not to mention complications that arise when one shifts from one academic system to another. In other words: more tensions ahead.

Networking. Most PhDs know well how to network: each conference, workshop, exchange semester, field trip or summer school is a terrific opportunity to make new academic friends. In principle, the postdoc years are not that different, except that networking after the PhD increasingly means the maintenance of already existing friendships. Here the tension comes from the realisation that the maintenance of one's network is not simply a matter of socialising: what *kind* of a scholar one is, in what contexts and collectives one hopes to make a difference, becomes clearer when one is forced to decide what relationships to nurture over the years, across countries and continents, even during a pandemic.

The future. Most postdoc contracts are short; one needs to think about the next job well before the current one expires. But there is more that increases the tension between the present and the future: many postdocs are also confronted with big life events – the birth of children, illness or the death of a parent – that make it difficult to concentrate entirely on academia. And that is probably a good thing, in the sense that the establishment of internal boundaries becomes really necessary when external boundaries are getting invisible (just think of those work emails sent out at night or in the weekend). All of that is likely to create, yes, even more tensions.

As I mentioned earlier, I refer to the postdoc years as the valley of shadows because they lack clear orientation points. Before long, the temperature drops, the visibility worsens and one begins to feel the tensions – the demands of teaching, the need to publish from the PhD versus the pressure to focus on the new project, institutional politics, the maintenance of existing networks, looking for the next job while trying to live a life – without any specific guidance as how to ease them. Postdocs might have bosses (PIs with specific research and publishing plans, defined by grant proposals or departmental committees, for instance) but rarely any supervisors to help them grow beyond the PhD, and it is difficult to remember the purpose of it all when doubtful voices are getting louder and louder. In such situations it is particularly important to keep one's cool and not change course too often. Postdocs should look out for each other more, and experiment with/insist on collaborative modes of knowledge production that offer alternatives to academic heroism. And their employers should realise they can make a crucial difference by trying to accommodate postdocs' needs in institutional settings where many of those needs are not even articulable.

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STS MULTIPLE

INTRODUCING THE CENTRE FOR THE SOCIAL STUDY OF MICROBES: A SLIME-MOULDIAN APPROACH TO RESEARCH

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The Centre for the Social Study of Microbes (CSSM) is a hub for social scientists, artists, and our collaborators to conduct research on human–microbe relations. Founded in 2021 with funding from Wellcome, CSSM aims to develop new approaches to making sense of microbes, their lifeways, and our entanglements with them.

The CSSM has its roots in a few Helsinki-based projects that, beginning around 2018, started to investigate recent changes in the roles, imaginaries, and representations of microbes in society. Phenomena like the fermentation boom, the rise of pandemic preparedness (pre-COVID), and the declaration of antimicrobial resistance (AMR) as a global emergency served as a starting point. We soon noticed that many researchers have shared interests in related areas like probiotics, fungi, marine microbes, gut microbiota, and soil. The CSSM is an attempt to bring together these researchers to see what is common across these topics in the ways that microbes are theorised and studied. Thus, we imagine the Centre to be more of a meeting point to facilitate such objectives rather than organising itself as a conventional research group or project with predefined outputs or timelines with work packages.

In particular, our interest in stepping out of laboratory settings—which have historically been the place for studying microbes—challenges us to seek non-academic collaborators such as artists, practitioners, and multimodal communicators. This has motivated CSSM members to, from the outset, explore non-traditional ways of organising activities and collaborations, while also questioning the rigid boundaries set by academic hierarchies, disciplinary limitations, and claims to validity and expertise.

Why study microbes? Microbes permeate our worlds, leaving no person, place, or being unaffected. Microbes—such as bacteria, moulds, yeasts, archaea, and protists—are not only biological entities but also shape, and are shaped by, our social worlds. Whether in settings as innovative as biomanufacturing or as mundane as handwashing, microbes raise profound questions such as: who or what is acting, who is governed and how, how is microbial knowledge produced and by whom, and what are the methods-in-action for studying organisms with, without, and alongside science? As STS and adjacent fields gather around a microbial turn in and beyond the social sciences (Brives and Zimmer 2021, Eisen 2014, Paxson and Helmreich 2014, Sariola & Gilbert 2020), we see the need for new social scientific tools to analyse the complex and entwined relationships between humans, animals, plants, microbes, and environments. Studying microbes shows the limits of a siloed approach, and so CSSM places a strong emphasis on multiplicity and multiple ways of knowing. We aim to expand our collaborations across disciplinary or geographic bounds.

Our membership is well described as a rag-tag bunch, with the phrase “Motley Crew of Holobionts” written into one of our office placards. Typically, CSSM spans research on AMR, bioremediation, composting, emerging biotechnologies, fermentation, lay/vernacular expertise, marine microbes, vagus nerve, and more, with approaches that inflect feminist, queer, posthumanist, and de-/anti-colonial commitments. Core group members hail from disciplines like sociology, anthropology,

psychology, communications, design, environmental science, food studies, global development studies, public health, policy, and philosophy. What unites CSSM is thinking with and through microbial life. In fact, in an attempt to foster inclusive, egalitarian, and multiple ways of knowing, CSSM follows an organisational model inspired by slime moulds who evolve without a central governing body.

We found inspiration in slime mould organisms as a way of countering organisational hierarchies within academia. Slime moulds are a group of mostly microscopic organisms that exist as an acellular entity, meaning they are unbound by cell walls and are instead characterised by having multiple nuclei and nodes that seek out nutrients and habitats. Slime moulds have been studied extensively in [artistic](#) and [scientific](#) inquiries, often to model distributed intelligence and decentralised decision-making. As artist-researcher Heather Barnett (2019) explains, slime moulds offer insights into polycephalism, a heuristic “to connect diverse ways of thinking and working in a process of co-enquiry.” CSSM takes seriously the slime-mouldian approach to non-hierarchical organisation, and multi-headedness. This means that, while CSSM has mechanisms to ensure that activities can take place, we leave the specifics of such activities, and therefore the outputs, intentionally under-defined so that they can emerge among CSSM members.

How we study microbes can be characterised in three ways: a distributed, experimental, and far-reaching approach.

CSSM champions a distributed approach, aiming for a less-hierarchical organisational structure given how university settings are rife with vertical power relations. The first year of CSSM was spent thoroughly consulting with feminist and sociocratic groups to clarify how we would conduct ourselves and set up our infrastructure. Our efforts since then have culminated in “safer space acknowledgements” that, similar to land acknowledgements made in Commonwealth countries, make explicit the asymmetrical power dynamics of any gathering and offer alternatives to the strictures imposed by professional decorum. Our steering group is composed of folks from different career stages, including PhD students, who participate in decisions ranging from hiring to resource allocation, and steering group membership rotates so that different people can take part. Implied within the CSSM ethos is that no one person, research area, or disciplinary background trumps the others in terms of value or stature. Instead, CSSM congregates across different projects (e.g., FIMAR, CrimScapes, Microbial Lives) in order to cross-pollinate. With no single figurehead dictating CSSM activities, this distributed approach allows for a low threshold for diverse activities.

CSSM activities are self-organised based on an experimental approach to thinking–doing research otherwise. Our engagements with microbial inquiry go beyond discussions in seminar rooms to do activities like fermenting, gardening, eating, foraging, composting, or practising different modalities for accessing microbes/methodologies, like sound recording and microbial whispering. Not only does this spirit of experimentation have methodological and pedagogical implications, it also epitomises the range of affinities that shift and multiply based on colleagues who come, stay for a bit, then continue on their way. In 2023 alone, CSSM hosted ad-hoc meetings with Roberta Raffaetà, Matthew Wolf-Meyer, Timothy Gitzen, Michael Hathaway, Tiffany Mak, and Shiho Satsuka, often over food, often in relation to their new or forthcoming projects. (Anybody who has witnessed our lunch routines will know that terms like ‘ad-hoc’ and ‘self-organised’ are modes of being at CSSM.) Other examples of thinking-by-doing include an AI workshop (March 2023), a spirulina workshop on reciprocal relations, a microbial wellness/spa day, as well as a series of improvisational dance and movement workshops hosted by our 2023 artist-in-residence.

CSSM aims to be expansive and far-reaching, both conceptually with microbial STS and literally with collaborators and resources. While CSSM is based at the University of Helsinki, it does not stay contained within a building or campus, with



collaborators at national and international scales and semi-annual cohorts of visiting fellows enlivening and broadening our research. Our 2023 Fellows included: Aman Asif, Santiago Kaderian, Astrid Schrader, Kari Lancaster, Kaajal Modi, Antonia Modelhart, and Lukáš Senft, with more in the coming years. CSSM has also invited members of the Center for Practice Theory at Lancaster University for an onsite workshop, and has also funded offsite workshops in Prague (May 2023) and Edinburgh (scheduled for February 2024). In September 2023, CSSM hosted its first of four PhD schools with 14 students hailing from America, Asia and Europe. After a year full of international visitors, we are starting to say phrases like “once a CSSM fellow, always a CSSM fellow” and “let’s scheme for next year.” With all sorts of chatter in our backchannels, we are seeing our hub slowly come to fruition.

Our work at CSSM is both theoretically motivated, as much as it is practically grounded, and our aim is that these twin emphases can co-produce one another. We are not only a data-producing project; we are also building research infrastructures through novel research questions, radical approaches, and expansive modes of collaboration. The misnomer of CSSM is that we are not a centre, but

Picture of slime mould *Tubifera ferruginosa* taken by CSSM’s coordinator Monique Horstmann. CSSM members often share with each other pictures of microbes they encounter in their own lives.



CSSM members in one of their regular summer picnics where fermented foods and drinks take over the menu.

an aggregate of interests that happen to coalesce around the social study of microbes. Our nodes can—and *do*—go every which way. We look forward to where they might lead us!

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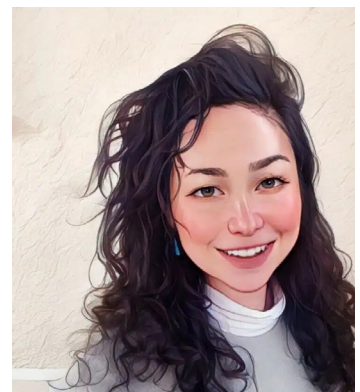
Maya Hey is an expert on human–microbe relations in food settings, holding degrees in dietetics, food studies, and communications. In her current role as a postdoctoral researcher with the Centre for the Social Study of Microbes (University of Helsinki) she studies fermentation and the material practice of how we come to know microbial life. Departmental appointments have ranged in discipline from media studies to rhetoric to sociology, where she has taught courses in critical thinking, articulation theory, special topics in food/media, science writing, and making/doing workshops. She leads the group [fff|food feminism fermentation](#) and is passionate about open education and pedagogy.



Jose A. Cañada (they/them) is a multidisciplinary social scientist with an emphasis on Science & Technology Studies (STS). They have developed most of their career at the University of Helsinki, where they earned a PhD in 2018. Currently they hold a University Researcher position linked to the Centre for the Social Studies of Microbes and study the reconfiguration of more-than-human relations in aquatic environment, looking at the proliferation of cyanobacterial blooms in Finnish water bodies and the way interaction between humans and environment changes in the context of the ongoing ecological crisis.



Alicia Ng (she/they) is a PhD researcher at the University of Helsinki, Finland and is a member of the Centre for the Social Study of Microbes (CSSM). Her doctoral research investigates multispecies and non/more-than-human perspectives in the microbially-based Nature-based Solution (NbS) known as bioremediation. As part of her upcoming postdoc work, she is also involved in the Multidisciplinary Center of Excellence in Antimicrobial Resistance Research (FIMAR).



THE EXETER CENTRE FOR THE STUDY OF THE LIFE SCIENCES (EGENIS)

John Dupré and Sabina Leonelli

We are arguably at a moment where science studies, and STS more broadly, are expanding hugely, taking in a large variety of disciplinary perspectives and at the same time merging with broader interdisciplinary and transdisciplinary endeavours to understand and tackle the pressing challenges of our time. In our view, the philosophy and history of science need to be kept at the core of this enterprise, in very close dialogue with social studies approaches and methods, and in collaboration with the natural sciences. This is not an easy act to juggle, yet we strongly believe that bringing together philosophical, historical and social scientific scholarship is crucial especially when wishing to retain a critical perspective on the place of science and technology in society. It is on this belief that Egenis, the Exeter Centre for the Study of the Life Sciences, has operated over the last 22 years.

<https://sociology.exeter.ac.uk/research/sts/egenis/>

Like many successful institutions, Egenis began with money. Specifically, 2.5 million pounds from the UK Economic and Social Science Research Council (ESRC) in 2003. This was part of a major effort by the ESRC to support research on genomics, hence our original name, the ESRC Centre for Genomics in Society. As a philosopher applying to such a funding body, founding director John Dupré had to produce a very interdisciplinary proposal. Fortunately, the celebrated sociologist of science Barry Barnes, and a highly experienced genome scientist, Steve Hughes, were persuaded to join as Co-Is. This interdisciplinarity, manifested as strong collaboration between humanists, social scientists and natural scientists, has been a strength of Egenis from its beginnings to the present day: the centre is a place where philosophers, historians, sociologists, geographers, anthropologists (and other disciplines broadly affiliated with science and technology studies), biologists, cognitive scientists, biomedical researchers, data scientists and engineers come together to discuss, reflect, conduct research, learn from each other, and co-produce knowledge and interventions. We also have long cultivated links to the arts, with artists in residence gracing our discussions with their insight and perspective – examples include Deborah Robinson, Gemma Anderson and currently Jacob van der Beugel. And over the years we have benefitted from a wonderful cohort of Masters and PhD students, both based in Exeter and visiting from all over the world, who contributed understanding and creativity in ways that challenged and inspired us all. Last but not least, the centre as a whole is strongly committed to creative forms of public engagement and co-designed research, ranging from the development of games and exhibits (even soap-operas (www.amorsecuestrado.com !)) to interact with various publics. It has made frequent interventions in national and international policy-making over research and its impact on society.

<https://sociology.exeter.ac.uk/research/sts/egenis/activities/events/>

<https://exeterbig.wordpress.com/>

<https://sociology.exeter.ac.uk/research/sts/egenis/research/>

Our work is structured around four key research strands, each of which organises regular activities including discussion and reading groups, and which interact weekly through our Egenis seminar series and the Egenis Research Exchange, a reading group dedicated to providing constructive feedback on our own work. The strands include: Biology & Environment; Data, Knowledge and AI; Health and Biomedical Research; and Mind, Body and Culture. Each Egenis member is invited to join at least two such strands, to ensure communication and at least partial overlap among these activities; and Egenis seminars are usually given by scholars whose work speaks to at least two, if not all, the strands.

Needless to say, a key determinant of the strength of an institution is the people it includes, and in this regard we have been very fortunate, with past research fellows including many names that may be familiar to most readers of this publication. Our first intake of research fellows included Jane Calvert, Paula Saukko, Christine Hauskeller and Hannah Farrimond, and early subsequent appointments included Maureen O'Malley, Staffan Müller-Wille and our present Director, Sabina Leonelli. Ginny Russell, who was a member of Egenis at its outset as our Communications Director, did a PhD in Egenis in Medical Sociology, and is now a Professor of Sociology and a co-lead of our research strand on Health and Biomedical Research—provides a personal microcosm of the various kinds of role on which Egenis depends. A collection of people doing interesting and overlapping research engenders a wonderful kind of positive feedback, and has attracted a constant and growing stream of visitors.

Two other ingredients of success that must be mentioned are space and administration. With regard to the former we were very fortunate in acquiring a donation that enabled the refurbishment of a partly derelict but beautiful Victorian mansion on the Exeter campus that has now been home to Egenis for many years (Picture 1). For the latter, we have been blessed with two long term administrators, Cheryl Sutton and now Chee Wong, who have for long periods been the force behind the success and smooth running of so many of our projects.



The difficulty with projects funded by major donors is that the funding almost always runs out. Often this is the beginning of the end for such projects. Almost £7 million from the ESRC over ten years was hard to replace. One factor that helped us survive was our embedding in a department, then the department of Sociology and Philosophy, soon to add Anthropology. Egenis and the department had, to a considerable extent coevolved, and a large proportion of the department staff had intellectual connections to Egenis. This was also an opportunity to broaden our remit, marked by a change in our name to the Centre for the Study of Life Sciences. Numerous appointments in our host department have provided additional people in all three of these disciplines who have central interests in the life sciences and are regular contributors to our activities. These include philosophers of biology, medicine, cognitive science, data science and psychology, and sociologists and anthropologists of science, technology and medicine.

Byrne House, located in Streatham Campus of the University of Exeter, was purposefully refurbished to house EGENIS thanks to a donation.

<https://sociology.exeter.ac.uk/research/sts/egenis/activities/events/>

information and registration here:
<https://sociology.exeter.ac.uk/research/sts/egenis/conference/>)

The biggest challenge is to maintain a flow of resources, and the turning point in our transition to an independent institute was the acquisition by both of us of major ERC grants, on Process Biology (JD), Data Science and Open Science (SL). These did much to convince the University that we remained a viable long-term project, and subsequent funding successes have confirmed this judgement.

Moving from the institutional to the intellectual, the factor that has perhaps done most to establish the position of Egenis in the academic world is our international connections. These have developed in various ways. One has been our frequent hosting of workshops and conferences. As well as very numerous focused workshops on particular topics of our research, we have over the years hosted the major meetings of the International Society for the History Philosophy and Social Studies of Biology, the European Philosophy of Science Association, the Society for the Philosophy of Science in Practice and the British Society for Philosophy of Science. We are at the moment preparing to host a major international conference celebrating our 20+2 anniversary on April 17-19 2024, to which all STS colleagues are warmly invited.

Most important, however, has been the flow of people. These have included a large number of postdocs and PhDs who have spent substantial parts of their early careers at Egenis, and a constant flow of visitors from a few days to several months. This has been greatly enabled by two factors already mentioned, our building, which provides a space in which visitors can expect to react with ourselves and one another on a daily basis, and our administrators who have worked tirelessly to make the mechanics of visiting Egenis work smoothly. We cannot estimate the proportion of scholars in Philosophy, STS, and the Social Sciences engaged with the life sciences who have visited Egenis, but it is very substantial. And, of course, Egenis scholars have regularly visited other centres around the world with shared interests. It is this, the personal relations built up over two decades, that is most fundamental to the position that Egenis has established in its inter- and multi-disciplinary arena.



*John Dupré is Professor of the Philosophy of Science, University of Exeter and Co Director of Egenis, The Centre for the Study of Life Sciences, which he founded in 2012. He has previously held posts at Oxford, Stanford, and Birkbeck College, London. He advocates a radically processual understanding of living systems, summarised in his most recent book *Metaphysics of Biology* (2021). He is a Fellow of the American Association for the Advancement of Science, an Honorary International Member of the American Academy of Arts and Sciences, and a member of the American Philosophical Society.*



Sabina Leonelli is Professor of Philosophy and History of Science at the University of Exeter, Director of the Centre for the Study of the Life Sciences (Egenis), lead of the "Data Governance, Ethics and Openness" strand of the Exeter Institute for Data Science and Artificial Intelligence, and Principal Investigator for the project "A Philosophy of Open Science for Diverse Research Environments" (www.opensciencestudies.eu). Her work spans data modelling, governance and AI-powered analysis across the biological, environmental and health sciences; and open science and related transformations in the global research landscape.

TRANSLATIONS

ACCESS TO AN UNPOLLUTED NIGHT SKY

by Jimena Pereira Paz, Kit Archibald, Dr Hannah Dalglish

HUMANITY HAS HAD A DEEP RELATIONSHIP WITH THE NIGHT SKY THROUGHOUT HUMAN HISTORY. DESPITE THE UNDENIABLE INFLUENCE THE STARS HAVE HAD ON ART, CULTURE, AND INDIGENOUS KNOWLEDGE SYSTEMS, THIS AGE-OLD CONNECTION IS FADING DUE TO INCREASING LIGHT POLLUTION, WHILE IS ALSO CAUSING ENVIRONMENTAL DAMAGE AND ECOLOGICAL HARM.

IN THE EXISTING LITERATURE, ARGUMENTS TYPICALLY FOCUS ON ADDRESSING LIGHT POLLUTION FROM SOCIOECONOMIC, ENVIRONMENTAL OR HUMAN HEALTH PERSPECTIVES, BUT OVERALL FAIL TO SITUATE A PRISTINE NIGHT SKY AS A HUMAN RIGHTS CONCERN. HERE, WE ARGUE THAT THE LOSS OF DARK SKIES IS INFRINGING THE RIGHTS TO TAKE PART IN CULTURAL LIFE AND ENJOY CULTURAL HERITAGE, AND TO ACCESS A CLEAN, HEALTHY AND SUSTAINABLE ENVIRONMENT.

INTRODUCTION

Light pollution is a global issue, stretching across land, below water, and even as far as beyond the Earth's atmosphere. Artificial light at night causes a wide array of problems including ecosystem disruption, altered chemical behaviours in humans and other living things, and a loss of access to dark nocturnal environments, the night sky included. However, in the literature, arguments against light pollution thus far have neglected to consider it as a human rights problem.

By reviewing light pollution literature and its associated cultural, social and ecological consequences, we explore whether access to a dark night sky should be a human right. Firstly, we discuss the influence the night sky has had on human culture and art throughout history. We argue that the loss of dark skies, along with the cultural practices and knowledge systems ingrained within, is infringing the right to take part in cultural life, and to access and enjoy cultural heritage. When considering the loss of the night sky for indigenous peoples, we maintain that this is a form of cultural genocide (Hamacher et al. 2020), violating the right of indigenous peoples to self-determination and to conserve their relationship with the natural world. Furthermore, we discuss whether living under a polluted night sky is breaching the human right to a clean, healthy and sustainable environment. Finally, dark sky tourism (DST) – as explored in Auala & Dalglish (2023) – may be a promising initiative to support the protection of dark skies and its stories, by raising awareness and generating support for future legislation.

ASTRONOMY IN CULTURE AND ART

For as long as humans have been observing the sky, astronomy has informed culture as much as culture has informed astronomy. Cultural ties to astronomy can be found across ancient civilisations throughout time and place (Gullberg et al., 2020), where celestial objects were revered as sources of power and wisdom, and the natural cycles of night and day were deeply respected. The Egyptians, Babylonians, Celts, and Incas, for example, all drew upon the arrangement of stars in the sky for religious, navigational, and storytelling purposes. We also find



occurrences of strong intangible connections between the nightscape and the human, finite, existence. The Irish once held the view that life continues after death, while the Welsh and Inca believed in cycles of death and rebirth. This is in contrast to the Greek beliefs of people transforming into stars and living on for eternity. An unpolluted view of the universe produces an extraordinary imagination in the collective consciousness on a spiritual and transcendental level.

Light pollution encroaches upon remote locations, often home to indigenous communities. This can be considered in the context of the 2007 Starlight Declaration, which states, “*an unpolluted night sky ... should be considered an inalienable right equivalent to all other socio-cultural and environmental rights.*” Limiting a cultural group’s access to their night sky and associated cosmologies is effectively erasing these cultural practices and knowledge systems. An example of this put forward by Hamacher, et al. (2020) is the Warrumbungle National Park in Australia, home to the Kamilaroi people. The Aboriginal group still gains and transmits complex knowledge systems regarding the night sky, and their practices depend on an unobstructed view of the Milky Way. Skyglow produced by surrounding cities and flares from fracking threaten the ability to observe The Emu in the Sky, an integral part of their culture. We need to rethink how we illuminate cities, where more than half of the world’s population live, so that we can guarantee continuous access to a dark night sky, to all citizens.

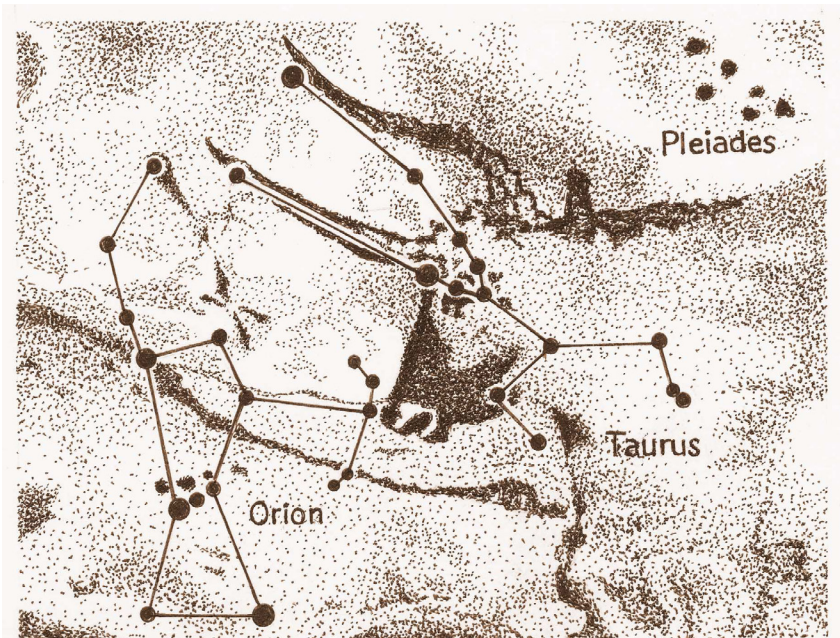
The Emu in the Sky is a “dark constellation” – formed by the dark clouds of the Milky Way – and has featured in Aboriginal storytelling for thousands of years.

Credit: Barnaby Norris

In another perspective, the United Nations declaration on the rights of indigenous peoples (2007) recognises their right to maintain, control, protect and develop their cultural heritage, traditional knowledge and cultural expressions. The UN also declares the right to their ancestral lands and territories, including their natural resources, and the right to be asked for their free, prior and informed consent before adopting and implementing legislative or administrative measures that may affect them. Nevertheless, no informed consent is being put forward regarding light pollution, despite it clearly being an issue of cultural and natural conservation. In the context of indigenous (and environmental) ethics, should the contamination of the night sky be treated as seriously as the pollution of a river?

The night sky can also be viewed as our one true common artistic heritage, reflected in the earliest cave paintings created tens of thousands of years ago, spanning to more modern times. Astronomical phenomena have been depicted in countless artistic works – from Walt Whitman’s poetry to Van Gogh’s paintings – evoking feelings of beauty, impermanence, and curiosity around our place in the cosmos. With light pollution increasing as fast as 9.6% every year (Kyba et al, 2023), could these culture defining and time defying artworks still be produced today?

[Image(s): La salle des taureaux (the bulls room) in the Lascaux cave, France, is believed to represent the constellations Orion, Taurus and the Pleiades (see Rappenglück, 1999)
Source: Brian Campbell <https://www.flickr.com/photos/67199489@N07/6117112969/>;
<https://treeofvisions.wordpress.com/2015/04/29/paleo-astronomy/>



LIGHT POLLUTION: A THREAT FOR PLANETARY HEALTH

A pristine celestial nightscape is unreachable for the vast majority of people. The sharp rise in light pollution in recent years results from the excessive and inefficient use of blue emitting LEDs. Given that 60% of Europeans and nearly 80% of North Americans cannot observe the Milky Way (Falchi et al., 2016), the newest generations inhabiting the planet are becoming less likely to encounter a naturally dark sky. This problem is not only limited to cities but extends to more remote locations, where light from populated areas contaminate the sky due to skyglow.

Artificial light is also a nuisance from space, where vast numbers of satellite megaconstellations have created a new source of light pollution from above. This is of particular concern given that the regulation of artificial satellites in lower Earth orbit is limited, and the private companies who typically launch them are often not held accountable (Venkatesan, et al. 2020). If we recognise space as a scientific and cultural resource for humanity, should we defend its exploration and use in favour of the interests of *all* global citizens?

Life on Earth is regulated by light-dark cycles; maintaining dark skies is beneficial to the health of humans and other living things. Artificial light at night disrupts this circadian rhythm, with detrimental consequences on flora and fauna, posing a serious threat to biodiversity (Holker et al, 2021). This is especially concerning given the sixth mass extinction of present times (United Nations, 2021). Further, the UN states: *"the unsustainable management and use of natural resources, the pollution of air, land and water, ... the resulting loss of biodiversity and the decline in services provided by ecosystems interfere with the enjoyment of a clean, healthy and sustainable environment and that environmental damage has negative implications, both direct and indirect, for the effective enjoyment of all human rights"*. This suggests that the negative impacts of light pollution regarding cultural rights and environmental rights are not separated, but interrelated.

RECONNECTING WITH THE STARS: DARK SKY TOURISM

Surprisingly, light pollution is overlooked by the majority of nature conservation organisations, and is little known in political or public spheres. The conservation of the night sky relies mainly on small, yet dedicated communities of dark sky enthusiasts, brought together by organisations like DarkSky International or the Starlight Foundation. The central goals of these organisations are to raise awareness about artificial light at night, bring forward improvements for urban lighting, and certify dark sky locations which helps to mitigate light pollution. These activities go hand in hand with dark sky tourism, which often takes place in remote locations giving people the chance to stargaze under unpolluted skies. Some destinations include storytelling as part of their offering, alongside opportunities to learn about local mythology. This could not only be a powerful tool to conserve dark sky locations and generate awareness about its value, but has also been shown to contribute to sustainable socioeconomic development (Auala & Dalglish, 2023), and therefore, to a full enjoyment of all human rights. Tourism also makes dark sky conservation more appealing to businesses and governments, where economic advantages are concerned.

If DST can empower indigenous and rural communities, and other minorities – via tourism and education – dark sky tourism enterprises could be the key to reducing light pollution. Yet, as these activities become more widespread, it is important to maintain respect for the lands and ecosystems where they take place, so that they do not become destinations subject to harmful overtourism and significant carbon emissions.

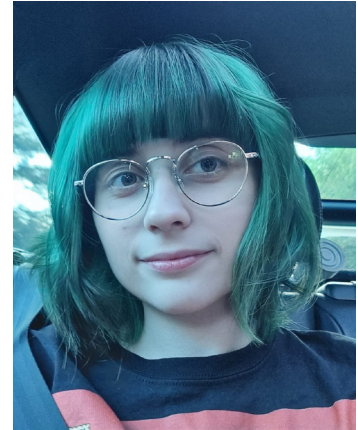
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Jimena is an amateur astronomer, dark sky enthusiast, and science communicator. She is currently pursuing a degree in Physics at the University of Buenos Aires. She is part of the advocate network of DarkSky International, working to protect dark skies worldwide. Contact email: jimepereiapaz@gmail.com



Kit is an astrophysics enthusiast, and an autistic individual with a passion for accessibility in STEM. Based in Northern Ireland, she works to make scientific research and publication available to people for whom the traditional academic environment is inaccessible. Contact email: kathyarchibald@gmail.com



Hannah is a Knowledge Exchange Fellow at the University of Southampton. She is a researcher with a PhD in Astrophysics, and has ample experience in science communication, public engagement and knowledge exchange. She has been involved in numerous international projects related to dark sky tourism, light pollution and policy, astronomy for development, and more. She is a former organiser of the International Astronomical Youth Camp, where this project was initially conceived in 2022. Hannah is also a former Trustee of the Royal Astronomical Society.



EVENT REPORTS

CARING FOR METHODS – FOSTERING DIALOGUE AND DIVERSITY IN DIGITAL ETHNOGRAPHIC METHODS

by Frauke Rohden, Julie Sascia Mewes, Sylvia Irene Lysgård

DRAWING ON OUR EXPERIENCE OF CONCEPTUALISING, CURATING, AND ORGANISING A PANEL ON POSSIBLE FUTURES FOR DIGITAL ETHNOGRAPHIC METHODS FOR THE NORDIC STS CONFERENCE 2023, WE ARGUE THAT CAREFUL ORGANISATION IS A VIABLE APPROACH TO FOSTERING DIALOGUE IN ACADEMIC KNOWLEDGE PRODUCTION. WE IDENTIFY THREE MODES OF CARE AS PARTICULARLY RELEVANT FOR FACILITATING ACADEMIC EXCHANGE AMONG A DIVERSE GROUP OF PARTICIPANTS.

CONSIDERING THE ORGANISATION OF PANELS AS CARE WORK PROVIDES INSIGHTS INTO THE PRACTICALITIES OF CREATING MORE DIVERSE SPACES FOR KNOWLEDGE EXCHANGE AND INSPIRATION. USING THE LENS OF CARE WORK TO REFLECT ON OUR EXPERIENCES OF ORGANISING THE PANEL HAS GIVEN US INSIGHTS INTO THE BEHIND-THE-SCENES WORK REQUIRED FOR FRUITFUL EXCHANGE AND INTO CARING FOR METHODS BY WAY OF PROVIDING COLLABORATIVE AND DIVERSE SPACES FOR DISCUSSION.

INTRODUCTION AND CONTEXT

From 7 to 9 June 2023, more than 400 STS scholars from the Nordic region and beyond met in Oslo, Norway, for the [6th Nordic STS conference](#) on “Disruption and Repair in and beyond STS”. We took up the conference theme in our panel “Disrupted fieldwork and digital research encounters: Futures of digital ethnographic methods and interdisciplinary collaboration amidst global challenges”. Under the umbrella of “digital fieldwork” (Venturini and Rogers, 2019), we invited both scholars who have been working with qualitative digital research for a long time and those who have entered digital research as a necessary response to the pandemic.

Disrupted fieldwork and digital research encounters

Futures of digital ethnographic methods and interdisciplinary collaboration amidst global challenges

Session 1, June 7, 11.00 to 13.00

Organized by: Julie Mewes, Frauke Rohden, Sylvia Lysgård

Figure 1: Panel information

In our discussion of the futures of digital ethnographic methods, we wanted to bring together these two groups of researchers. On the one hand, there are researchers with a dedicated interest in the digital and the methodological innovations it enables. They are involved in conversations around digital STS (Vertesi and Ribes, 2019), which are connected to interdisciplinary conversations around internet research, digital humanities, computational social sciences, and many more. On the other hand, some researchers encounter digital research as the digital seeps into their work through field sites and methods moving online, not least in the wake of the pandemic. They have become interested in virtual and digital methods out of pragmatic necessity. While there is some overlap between these conversations, they represent a variety of different entry points and experiences of digital research.

Our panel gave us the opportunity and challenge to bring these two discussions together. Anders Munk presented a reflection on digital methods related to generative artificial intelligence. Jarita Holbrook presented her use of videos to trace the careers and identities of astrophysicists. Marjo Kolehmainen commented on the screen as both a window into and a mask over various aspects of home environments in online counselling. Katharina Berr worked with observations of science communication on Facebook and reflected on the use of screenshots in her research. Chenchen Ma presented the digital practices of people with disabilities in China. Finally, Andreas Birkbak presented the division of labour between researchers who make, use, or criticise digital tools. After the presentations, we gave a summary of the presentations and held a joint question and answer session.

Our work in caring for the panel already started back in autumn 2022 with constructing our call for papers. We were “particularly interested in research exploring a) the concrete doings of digital ethnography and methodographic reflections on the performativity of our research methods, collaborations, and digital devices (Greiffenhagen et al., 2011; Lippert and Mewes, 2021), and/or b) reflections of the potential future implications for STS methods during global geopolitical, ecological, and health-related challenges.” (Mewes et al., 2023) universities were among the first institutions to go into lockdown, moving academic work off-campus and limiting access to nondigital field sites. Simultaneously, digital solutions became integrated into work practices and personal lives, moving field sites online at least partially or temporarily. This required ad hoc readjustments to suit the new social, material, and technological needs of remote research as much as the spatial configurations of ethnographic methods. Long-term effects included the (temporary).

We intended the panel to be a collaborative space for STS researchers interested in ‘the digital’ - be it as an empirical, theoretical or methodological concern; and to gather experiences of digital fieldwork during the pandemic to inform future discussions on digital STS. As part of the collaborative space, we also contributed by formatting the space for interaction with a brief introduction to the panel and provided clear expectations for time management. We also took notes during presentations to summarise papers and make their connections and relationships visible, as a way of facilitating the collaborative Q&A at the end of the panel. These practices, we argue, need to be seen as the attentive care work of the organisers, understood as contextual work to coordinate the presentations and their messages, to allow the event to play out as a prepared, albeit playful, improvisation, which is only possible through careful planning and execution of the panel. We wanted to actively bring together the diversity of digital ethnographic approaches as a way of caring for methods.

CARING FOR METHODS THROUGH THREE MODES OF CARING FOR THE PANEL

We organised the panel around what we can, in retrospect, broadly categorise as three different modes of care. These are concerns that we have been working on in all parts of the process of making this panel happen: The care for an open call, the care for curating presentations, and the care for time and place of the event.

Caring for an Open Call: The work of cultivating this diverse panel and attempting to make connections between presentations began with a call for papers in which we gathered our own diverse encounters and experiences with the digital in STS research. Combining our own different backgrounds, we tinkered with the wording of the call to make it accessible to a wide range of participants, and actively sought to make our call fit into the context and theme of the overall conference, before circulating it through our respective networks. This preparatory work formatted the space for the curation of the panel event itself.

Caring for curation and storytelling: Once the final decision had been made about the participants joining the panel, we had to decide how to weave the presentations into a coherent overall story and how to give each of the presentations enough space in the limited time of a conference session. We decided on alternating between early career researchers and more experienced researchers, and on a joint discussion of all the presentations at the end of the panel, rather than questions after each individual presentation.

In order to tie the presentations together, we formulated overarching guiding questions as a framework for the whole panel, for participants to reflect upon, and to facilitate the concluding discussion:

- “How is ‘the digital’ discussed as an empirical, theoretical or methodical concern?”
- “Which implications does this have to the present and futures of digital STS and STS ethnography?”

Before opening the discussion, Sylvia Irene Lysgård provided a commentary that linked the presentations and noted common tendencies and themes mentioned by several panellists.

Guiding Questions

- How is ‘the digital’ discussed as an empirical, theoretical or methodical concern?
- Which implications does this have to the present and futures of digital STS and STS ethnography?

Figure 2: Guiding questions

Caring for time and place: The materialities and temporalities of collaborative spaces are important in creating welcoming, friendly and diverse contexts for engagement. To ensure the right pacing and a good balance of presentations and discussions, we used clear communication of our planned schedule and defined roles for introducing the panel, keeping time, and summarising our observations of the presentations (made possible by our three-person collaboration, which allowed us to share different aspects of caring for the panel). As one of the presenters was unable to attend in-person, we tested the video and audio set-up for the pre-recorded presentation in advance to ensure a smooth transition during the panel. Similarly, we had asked the panellists to share their presentations in advance to avoid any technical hiccups when switching between presentations. The panellists, in turn, returned the favour by following our suggestions and keeping to the agreed timings for their presentations. Despite the tight schedule, we made

room for a five-minute bio-break. This staple of virtual meetings was also useful in this in-person event, allowing everyone to take care of their physical needs, such as having a drink, opening the windows for fresh air, or stretching, without disrupting the presentations.

CARING FOR METHODS AS CONTEXT WORK

Seeing our organization of the panel as care work links to long-standing STS interests in context (Asdal and Moser, 2012) and to considering STS itself as method (Law, 2016). Turning STS's attention to practice to our own experiences with the panel, we have used the framing of care work to examine our ambitions, intentions and experiences with the panel.

The notion of care has proven to be a useful analytical lens in a number of areas in recent years, including researchers' care practices for their methods (Mewes and Lippert, forthcoming). In the case of digital and digital methods, which encompass a wide and diverse range of methods and materials, care is crucial to discussions around these methods.

One of the questions that arose during the panel discussion was whether there is a collective "we" in the discussion of digital ethnographic methods, or whether novel computational approaches and digitised or virtual approaches based on traditional ethnographic methods need separate arenas for discussion.

In our preparation and execution of the panel, we wanted to provide a context for this discussion, a facilitation that would allow different experiences of the digital to fit into the same context - to make the digital a shared space or boundary object that is fluid enough to connect different experiences.

Panellists and organisers as well as the audience of the panel were concerned with methods in this setting. With different practices and roles, together we produced a context in which care for methods was possible through careful preparation and facilitation. However, rather than a planned choreography, our approach left room for interaction and improvisation based on the care work that everyone had put in beforehand.

CONCLUSION AND OUTLOOK

We believe that those of us who are discovering the full impact of the digital for the first time, and those more experienced in digital research, have much to learn from each other. The question remains unresolved on whether there is an all-encompassing 'we' in digital methods, or a need for separate discussions. Nevertheless, the interactions during the panel were fruitful. The mutual exchange across a diverse set of experiences prompted reflections on how we talk about and draw boundaries around not just the objects of our research, but also the methods we use to study them. As the digital was held at the core of our collaborative discussion, it became obvious that it is a highly multifaceted object. Furthermore, to care for methods being diverse also in the digital realm is vital, as long as we believe methods are involved in constructing social realities, not merely describing them.

Organising and facilitating this panel has shown us the importance of behind-the-scenes work in academic conferences and the value of organising panels as a relevant academic service. The positive feedback we received from both the participants and the audience has shown that the work we put into organising the panel was well received, and especially that the diversity of approaches presented was appreciated. At the same time, the panel has been a place of intellectual inspiration and collaboration among us panel organisers. We hope to continue the conversations that were sparked by the panel both among ourselves and with the panellists in future events and projects.

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WORKSHOP REPORT

'THINKING SPEED: STORIES, PROMISES AND PRACTICES OF DIGITIZATION'

by Roos Hopman, Tahani Nadim, Lisette Jong

Museum für Naturkunde Berlin, 5-6 June 2023

Why are natural history museums digitizing millions of specimens? And why is there such an emphasis on doing this speedily? Who benefits from speeding up the digitization of collections, and what might the focus on speed obscure? In other words, what might be learned about the politics of speed when examining collection digitization, and the assumptions about the digital? These were some of the questions that led Roos Hopman and Tahani Nadim, organizers of a recent workshop, to invite scholars from different institutions to join them for discussions at the Museum für Naturkunde Berlin, where they have been co-conducting research on the large-scale digitization of collections since 2021. In the workshop titled "Thinking speed: stories, promises and practices of digitization", funded by the Berlin University Alliance in the context of the "Museums & Society: Mapping the Social" project, the organizers wanted to facilitate the articulation of shared concerns around speed, the digital and attendant issues. The workshop brought together scholars interested in collectively thinking (with) speed: Where does speed pop up in- and outside of-natural history museums, what does it do in these contexts, how can it be made sense of? It was important to the organizers that discussions were situated and responsive to the specific material and discursive spaces of the museum. Hence we visited one of the museum's exhibitions, wandered around its basement, had drinks in its gardens, made a visit to the non-public collections, and got our hands dusty in one of the museum's libraries.

On the first afternoon of the workshop Roos and Tahani introduced the themes of speed and digitization to the group by paying a visit to the digitize! exhibition, where, using a conveyor belt system, "scan operators" have been publicly mass-digitizing insects since autumn 2021. Examining this human-insect-machine assemblage offered an apt prompt for questions connecting speed, digitization processes, and natural history collections. On display are not only the machine and insects but also human workers who gently place each insect onto the conveyor belt, and return it to its drawer after it completes its trip through the digital photography station. In this arrangement, digitization means taking high-resolution digital images of the specimens and accompanying labels. But it also entails an additional set of processes such as cleaning, and rehousing specimens to new boxes. A large wall of screens, which shows the number of insects per unit of time that are "processed", forms the background to this operation. Here, speed figures as a quantifiable measure of success. This raised questions about speed becoming an aim in itself because it appears so "doable". We also discussed how insects, being relatively small yet so numerous in the museum, were particularly suitable for such a spectacle of digitization and its enactments of speed.

The participants then moved to the paleontological library, where time seemed to slow down to a geological pace. Reams and reams of mostly old (and some new) books (mainly from the 19th century), manuscripts, journals and leather-bound volumes lined its walls, index card catalogues nestled amidst shelves, and old globes hovered on top of the wooden cabinet that formed the backdrop to our gathering. After a first round of introductions, Tahani and Roos invited the participants to explore the library, browse its contents and select a passage that resonated with



Fig 1. *Vulpes Vulpes*

them and/or with the workshop's topics. As we re-assembled around our meeting table, participants each read their text passage out loud and provided an explanation of why they chose it. This exercise brought up expected and unexpected associations relating to the meaning of 'data' in "the Data of geochemistry", to quibbling between geologists on the validity of scientific descriptions, and to the economy of time in scientific surveys of British India. The passages sparked conversation about current categorization practices and the politics of digitization, offering a stark reminder of the colonial legacies in specimen collecting and field research. We ended the day in the museum's so-called "Zaubergarten" where, magically, a red fox (*Vulpes vulpes*, Linnaeus, 1758) appeared.

The morning of the second day was centered around short inputs by each of the nine participants. Everyone had been asked to relate to the concept of speed, to present how it appears in their work, and how they make sense of it. Prior to the workshop, the organizers had sorted these contributions into three themes: 1. Data, governance, instantaneity; 2. Collections, datafication, urgency; and 3. Technology, innovation, desire. Contributions in the first session demonstrated how speed is performed "from above", for example through a "live" dashboard tracking the processing of governmental reports in Bangalore (Nafis Hasan), through the promise of "anytime/anywhere" identification in the context of Aadhaar, India's national biometric database (Vijayanka Nair), or with "smart" traffic lights in Vienna (Pouya Sepehr). In the second session, the focus shifted towards natural history specimens (Lisette Jong and Roos Hopman) and biodiversity data preserved in cryobanks (Veit Braun).

In these inputs the shared sense of urgency evoked around the anticipated extinction of species legitimized speed. In the final session we took a pause to examine the problem-space which poses digitization as a solution (Andrew Gilbert), the promissory narratives around new technologies through the pace of obsolescence and "temporal drag" (Tahani Nadim), and the assumed speed of algorithmic processing (Ildikó Zonga Plájás).



Fig 2. Participants doing their homework in the paleontological library

After lunch we went on an excursion to the museum's malacology (snails, slugs, clams, cephalopods) collection to look for speed in situ. There, we were welcomed by Nora Lenge-Maaß and Margot Belot, who have been overseeing efforts to digitize its estimated seven million snail shells since 2020. Explaining the technologies used to digitize this collection to us, they addressed questions and issues they face inventoring and photographing (sometimes extremely tiny) specimens en masse. During this excursion surprising connections to our previous discussions emerged. We learnt that speed is measured and tracked through numbers of specimens digitized and that progress is mapped via a "digital dashboard" resembling the dashboard displays we find in most cars. Finally, we noted how the project of speeding up introduced novel ways of ordering the museum's organizational processes, introducing notions such as "workflows" and "storytelling" into collection work.

In our discussions, key questions were raised about speed as a value within contexts which strive for continuous optimization, such as in the case of automated traffic lights (Pouya Sepehr) or digital IDs (Vijayanka Nair). These and other cases highlighted the relation between space and speed: since speed and velocity, as Lisette Jong reminded us, are physical properties describing the rate at which objects cover distance. Our case studies (and excursions) thus prompted consideration of how speed acts upon our fields and sites. Such consideration also encompasses an assessment of the epistemic space through which questions of speed become legible (and relevant). Here it was interesting to note that many of us reflected on speed through colonial contexts, rather than contemporary technologies.

However, each participant grappled with very different iterations of speed. Speed for example emerged as a measure of efficiency and productivity in bureaucratic practices, as a sense of urgency in accounts of biodiversity loss, and as a heuristic to think with. Speed was also unsettled in different ways: for example, by following those activities of bureaucrats and scan operators that cannot be captured

in a workflow (and thus escape or, indeed, refuse optimization), by observing the long meetings and discussions that precede the training of algorithms, or by attending to those machines that are considered to no longer be up to speed. It became apparent that when we were discussing speed, we readily equated it with being fast. But whereas speed is always about movement, about motion, it does not necessarily mean fast movement. This brought us to critiquing the need for speed: we questioned it, and wondered about alternatives for speed. While our ethnographic cases demonstrated how speeding up was obscuring particular kinds of labor and histories, we also wondered whether we might think of speed in “less dystopian” ways, as our participant Andrew Gilbert put it. Rather than trying to reify “speed” as a comprehensible object of research, our final discussions arrived at the theme of temporality, more generally. Our objects – frozen tissue samples (Veit Braun), obsolete machines (Tahani Nadim), colonial handbooks (Nafis Hasan), simian bones (Lisette Jong) – articulate very different notions of time (biological, social, bureaucratic) and, embedded in practices, can disrupt the normative organization of historical time (its proper workflow, if you will).

This workshop gathered nine people interested in engaging with the notion of speed and in thinking and collaborating with one another beyond the workshop. Some of the participants will submit a panel for the 2024 joint 4S/EASST Conference, and another workshop on the topic of speed/temporality and data will be planned for next year. In these future meetings we also want to explore more creative and interactive (digital?) formats. (Producing an alternative dashboard was suggested.) We very much welcome others who want to join forces to think these topics through. Please reach out to us!

Fig 3. Participants talking speed in the exhibitions



Roos Hopman is a researcher between the Museum für Naturkunde Berlin and the Humboldt-Universität zu Berlin, where she studies data collection and digitization practices as part of the BUA funded 'Museums and Society' project. Besides providing a fascinating research site, working at the natural history museum has further deepened her affection for and interest in snails and other gooey creatures. Previously, she studied forensic genetic technologies and the surfacing of race in them. She is also a recent addition to the EASST Review editorial team.



Tahani Nadim is Junior Professor for Socio-Cultural Anthropology in a joint appointment between the Museum für Naturkunde Berlin and the Department for European Ethnology at Humboldt-Universität zu Berlin. She co-heads the interdisciplinary Center for the Humanities of Nature at the Museum für Naturkunde Berlin and runs the experimental research unit Bureau for Troubles in which she collaborates with artists and curators. Her work focuses on the datafication and digitization of nature and, more recently, the politics of conservation.



Lisette Jong works at the Anthropology Department of the University of Amsterdam. Her research into the entanglements of natural history and colonialism is part of the project 'Pressing Matter: Ownership, Value and the Question of Colonial Heritage in Museums' funded by the Dutch National Science Agenda (NWO). Her research investigates non-human primate remains that arrived in natural history museums and university collections in the Netherlands through colonial networks and focuses on historical and present-day concerns around extinction and human-animal boundaries in scientific and museum practices. digitize



NEWS FROM THE COUNCIL

LOOKING FORWARD TO THE 2024 CONFERENCE

EASST/4S: Flowing from and back to Amsterdam

It was a steaming hot summer in Madrid. The choice to meet again as a community of STS scholars for the first in-person EASST conference post-lockdowns had clearly been a brave one: walking down the long route through the deserted conference centre signaled how few collectives had dared to plan ahead like this in uncertain times. The result was unsurpassed, with palpable excitement about meeting again as embodied scholars. What a pleasure when getting coffee is something done together rather than an apology to walk away from the screen. When a conference spills over in breaks, on squares, and cafes. When walking home from the conference social events blend straight into Madrid Pride. Within the buzz of all of this, the idea emerged of a 2024 joint EASST/4S meeting hosted by the Athena Institute at the Vrije Universiteit Amsterdam. Some of us should have known better, but seeing that intriguing combination of fulfillment and exhaustion on the faces of the local organisers proved too hard to resist.

The 2024 joint conference with the theme *Making and doing transformations*, means a return to Amsterdam, although for most attendees the 1988 meeting will be a part of institutional experience rather than a personal one. Even for some of us who were in Amsterdam at the time, this was a time of ecstatic celebrations following the Dutch teams' victory in the European soccer championships rather than an academic highlight in their lives. Yet, there clearly is much STS history for this meeting to return to. The plethora of '... and society' departments that sprung up in the 1970's and '80s and the thriving Dutch Science Shops, which gave rise to similar initiatives across the globe, provided fertile soil for the infrastructural fostering of STS scholarship and teaching. Founding the Netherlands Graduate Research School of Science, Technology and Modern Culture (WTMC – the acronym works in Dutch) in 1987 and hosting the 1988 joint meeting, as well as the 2008 joint meeting in Rotterdam, were both consequence and cause of the strong networks that continue to make STS in the Netherlands. Perhaps most telling about the ways in which STS has become institutionalized over the decades is that when composing a Program Committee for this meeting, with members from STS institutions in the Dutch academic landscape, this connects a stunning 13 institutions – in a country with a population that roughly equals that of cities like Bangkok, Buenos Aires, Cairo or New York.

2024 is also a time for looking forward. With a continuously growing field, questions regarding STS conferencing futures are particularly pertinent. During a recent online EASST Special General Meeting on the future of conferencing, the one thing that participants seemed to agree on was that this topic is best explored through experimenting rather than through position-taking. At the Athena Institute this experimentation commonly takes the form of trying out ways to foster flows of learning. Open Panels used to almost exclusively consist of rows of paper presentations, with other forms of knowledge expression being confined to either the STS Making & Doing programme or to a stand-alone workshop or session. Thematic explorations thus tended to get infrastructurally decoupled from non-paper-presentation formats. With the help of NomadIT, who are going out of their way to support the conference organisation, we could introduce Combined Format Open Panels that provide space for format experiments *within*



a panel theme. Thanks to the creativity among the memberships, about one third of the Open Panel proposals have adopted this format. We hope that, in addition to many wonderful paper presentations, this will create the kinds of generative conversations that allow us to continue to learn what it means to *do* conferencing differently.

Another change we are exploring is to reduce the number of plenaries. Flows of learning are hard to foster in that format, especially in a big gathering. Instead, we're thinking of replacing most plenary sessions and the optional paid party/dinner with a 'Making & Doing Transformations' event in the Amsterdam city forest. This event will be open to all participants. The forest is only a short bicycle ride from the Vrije Universiteit, and we trust that taking STS to the woods will be a fruitful way to help 'unconference' the event.

You may have seen our message about the number of Open Panel proposals received: four!hundred!andfive! This suggests that the gathering will become quite large, with the number of *panels* roughly equivalent to the number of *participants* in the 1988 conference. The organizing committee, with the help of the Vrije Universiteit events bureau, is trying to accommodate such large numbers and make the conference enjoyable and stimulating for all. But its success ultimately depends on how the conversations are made collectively. For a meeting of such scale, we hope the art of hosting – where hosting becomes a collective endeavor, and leadership is distributed and participatory – will be practiced by many. We also feel this may be our best chance of making the conference a practice space for having conversations – including difficult ones – in generative ways.

Amsterdam itself may not need much introduction. We hope you will find it easy to get to the conference venue, thanks to many train connections, including direct trains from, among others, Basel, Berlin, Copenhagen, London, and Paris. For attendees from further away, Schiphol Airport is a major international hub. We hope that these train connections and direct flights minimize emissions for conference travel. We do want to emphasize that Amsterdam is a city that is much smaller than its reputation! We recommend that if you are considering to attend, you book your accommodation now, with the option to cancel your reservation.

Let's meet again! There will be those for whom this is their third joint meeting in the Netherlands. Many more will have attended EASST meetings in the recent past. And there will be plenty for whom this is their first STS conference. We hope the collective effort of making all feel welcome will make this event another inspiring step in decades of curating, nurturing, and caring for STS scholarship and practice in the Netherlands and beyond.

Teun Zuiderent-Jerak, Michiel van Oudheusden, Barbara Regeer
(conference co-chairs)





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The Association's journal was called the EASST Newsletter through 1994.

COVER ILLUSTRATION

A screenshot from the videoperformance Microbimpro, which handles improvisation, gut feelings and microbes dancing. Artist: Oona Leinovirtanen