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In Australia there is the Australian Science Communicators site at <http://www.asc.asn.au/>,

and the Australian National University has a graduate program at the Centre for the Public Awareness of Science. Their web pages is in the process of massive up-dates, but you can visit the older site at <http://www.anu.edu.au/scicom>

For the United States, a Directory of Science Communication Courses and Programs is at <http://murrow.journalism.wisc.edu/dsc/dsc.cgi>. and the National Association of Science Writers is at <http://www.nasw.org>.

### EASST 2002 Conference

July 31 to August 3, University of York  
Theme: Responsibility under Uncertainty: Science, Technology and Accountability  
See for details the previous issue of the EASST Review  
The email address for any correspondence is: [easst2002@conference-events.york.ac.uk](mailto: easst2002@conference-events.york.ac.uk)

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*frontpage illustration:*

Dick Mol (scientific coordinator), Dr. Alexei Tikhonov (of the Russian Academy of Science), and Dr. Ross MacPhee (of the American Museum of Natural History) working to defrost a section of the Jarkov mammoth for study. Copyright Cerpolex; photo taken by Francis Latreille

# EASST

## Review

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## When Science Meets Film in the Land of the Woolly Mammoth

by Adrienne Ciuffo  
Ventura, California

October 1999 – against all odds, the remains of an extinct woolly mammoth encased in a 22 ton permafrost block were airlifted off the Siberian tundra and into history. The Franco-Russian expedition that had unearthed the mammoth, triumphing over time and the extreme conditions of the Arctic North, had opened a new door to the world of the late Pleistocene.

As a filmmaker on assignment for the U.S.-based Discovery Channel, it was my job to help usher a global audience over that threshold. The goal: to produce a documentary film that would be both entertaining and educational – that would promote adventurous science, and scientific adventure. A film that would separate truth from hype – the sensational (the exciting discovery of what appeared to be largely intact remains of the Ice Age behemoth) from, well, the *sensational* (the imminent resurrection of the species through cloning).

It was an irresistible and daunting challenge given a production deadline as severe as the Siberian autumn, and the expectations of television viewers in more than 150 countries, who would tune in to see Discovery's heavily-promoted *Watch with the World* special – *Raising the Mammoth*. Photos published in the wake of the mammoth's helicopter ride out of extinction and into the 20<sup>th</sup> century captured global imagination – especially one almost surreal image, featuring French explorer Bernard Buigues gazing at a perfect pair of 3-meter-long ivory tusks against a backdrop of azure skies and Arctic mist.

Reporters were having a field day. Their writings ranged from the thoughtful to the bizarre. From *Paris Match* to *The New York Times*, from the screaming tabloids of London to more tempered articles by science writers throughout the world, in language ranging from excited "trist but verify" tones to downright skepticism, the event of this discovery was threatening to

overshadow the science.

So how does a small film crew cover a science story the size of a woolly mammoth and maintain its integrity? The same way one would 'eat an elephant' as the saying goes – bite by bite. The many 'bites' that our production and post-production teams would eventually assemble into two feature-length documentary specials, that include *Raising the Mammoth* and its 2001 sequel, *Land of the Mammoth*, rely heavily on information gleaned from scientific advisors.

The high quality science programming broadcast on Discovery Channel, Britain's Channel 4 and other reputable networks almost always owes its success to close cooperation between filmmakers and scientists. Though these 'partnerships' are frequently quite congenial, as a producer / writer, I sometimes get the impression that scientists view members of my industry as an enigmatic and unruly species – best left undisturbed in the wild. And, of course, we filmmakers also fall victim to stereotypes as we wonder what possible professional obsessions or private eccentricities could drive field scientists to some of the least hospitable places on Earth, year after year, to rummage through the fossil record.

This is the story of one such cooperative effort to marry science and entertainment in producing a documentary of which even our paleontologist film characters could be proud. To make sense of the life and death of one woolly mammoth twenty thousand years ago, as the vehicle for further insight into the demise of his species at the end of the last Ice Age.

*working with scientists*

While *Raising the Mammoth* focused primarily on the adventure of the Ice Age find, it was a logical step for me to fashion the sequel, *Land of the Mammoth*, as a portrait of the woolly mammoth's world in the years before it vanished from history. How did it live? What was its environment like?

And how did it die? Reconstructing the world of the late Pleistocene would require the assistance of scientific consultants from the earliest conceptual stages of pre-production to delivery of the finished film.

Building the team of experts who occupy these pivotal roles both on camera and behind the scenes is my job as the film's producer. It is one of my favorite tasks in pre-production, involving a mix of journalistic skills (research, interview and editorial), a wide network of contacts, and a huge measure of intuition. Sometimes it's possible to tell whether a scientist will shine on-camera by the way he or she answers the phone.

What makes a scientist "mediagenic?" It's simple: we look for dynamic personalities ... people of action doing interesting things. Clearly, for a documentary to sustain over a two-hour period, there must be something to film. "Stars" in their fields can work for us, but only if they are not "overexposed." We like "up-and-coming" scientists with new ideas and a measure of irreverence about the status quo. Or dedicated amateurs with a scientific track record. Although it is tempting to go after talent whose scientific theories are a bit on the fringe, credibility always prevails.

It's a balancing act -- the creative equivalent of a tightrope walk -- exhilarating and risky business for filmmakers, because the scientific talent we choose can "make or break" a production. The addition of scientific advisors to a team tends to infuse what was initially just a good idea with a burst of "kinetic" energy, as everyone weighs in on the elements that "must" be covered in the film, and strategically makes his or her point of view known.

Though they might wish they could, our scientific film characters don't define the production agenda. In fact, when shooting days are "tight," it's our film schedule that often determines how much fieldwork scientists may actually get to do on location. This is one of the greatest potential areas of conflict between film producers and scientists, who have all traveled thousands of miles to pursue personal and shared goals. It's the ultimate give and take situation in a production and, some might say, the price that scientists pay for their exposure.

Unpredictability is the norm in any Siberian adventure. As filmmakers, we move forward, knowing that our "wish list" film structure will be continuously altered by circumstances. It is rarely the conflicting professional agendas of our film

subjects who, despite sometimes major differences of opinion, tend to be too polite with each other -- or perhaps less confrontational -- with the cameras rolling.

Rather, the circumstances tend to be logistical snafus such as false leads in the field, weather (especially storms) or the lack of a helicopter -- the taxi of the tundra -- when it is most needed. I was disappointed to realize near the outset of our production that several studies of "evidence" recovered from the new mammoth find (such as insect remains and hair) would not even begin before our airdate. Like other members of the expedition, we would have to be resilient -- with plans B and C at the ready.

We were not starting from scratch in searching out a scientific team. Bernard Buigues, the explorer whose two-year quest culminated in the extraction of the woolly mammoth (known as Jarkov) from the Taimyr Peninsula in 1999, had already attracted a vast network of experts in a variety of fields. Most were interested in fieldwork or samples of mammoth tissue for laboratory analysis.

The charismatic Buigues, who came down with Arctic fever more than a decade ago, and who has led private expeditions to the North Pole ever since, makes his home-away-from-home in the tiny Siberian town of Khatanga -- possibly the least Parisian environment on Earth.

It was his longstanding relationships with the nomadic Dolgans -- a people of Turko-Mongolian descent with an encyclopedic knowledge of the tundra, which made him aware that well-preserved tusks of long extinct mammoths periodically melted out of the permafrost. He was fascinated by the idea that where there were tusks, there might also be frozen carcasses. And if so, might not these animals -- carved out of the tundra in autumn and preserved in their frozen state -- afford scientists more precise clues to the mysterious demise of their species? His unwavering vision in the pursuit of this idea, his friendship with the Dolgans, and his growing interest in paleontology ultimately culminated in the spectacular raising of the Jarkov mammoth.

Early on, Buigues was joined in his quest by Dutch mammoth expert Dick Mol. Mol, an amateur paleontologist who has co-authored numerous scientific papers, has been collecting woolly mammoth fossils from the North Sea for 30 years. For the past several, he has also been the scientific coordinator of the Siberian expeditions mounted by Bernard Buigues. Mol

became one of our primary advisors.

From floor to ceiling, his home on the outskirts of Amsterdam is a treasure trove of Pleistocene finds (including a giant woolly mammoth femur, lower leg and foot skeleton that stands sentinel over the dining area). He is passionate, and tireless in his quest to acquire and disseminate information. By the time we met, his "hands-on" approach to paleontology had earned him the respect of colleagues affiliated with museums and universities in the Netherlands. To have on-going access to the expertise of Dick Mol and other key consultants would be critical to making a complex film on a tight deadline.

From day one of the film project, Mol and others made every effort to steer us in the 'right' direction in our research and to fill in the gaps in our knowledge (as non-scientists). By the end of the production, every member of our film team understood the basics of paleontological detective work and why it was important to differentiate between grazers and browsers in the Siberian ecosystem. We were attuned to the latest advances in ground-penetrating radar. And we learned why the mammoth steppe 20,000 years ago was probably not a snowy landscape -- though for dramatic reasons, we exercised poetic license, and a dusting of white did appear in our Pleistocene animation.

#### *poetic licence?*

Poetic license is by definition an unscientific concept, and our consultants weren't always thrilled about the choices we filmmakers had to make to hold an audience. Case in point: the production decision that inadvertently became 'the great snow debate.' At the time, we had no scientific consensus about the presence of snow on the ancient mammoth steppe, and decided to use it in an animation sequence to punctuate the death of the Jarkov mammoth. Dick Mol, who firmly opposed this decision, now has the corroboration of several pollen experts who have analyzed sediment from the mammoth tomb. The verdict: that the Taimyr Peninsula was snowless in the final days of the woolly mammoth. It's convincing, but whatever the ultimate scientific outcome here, I know we will be discussing that footage for years.

American Museum of Natural History curator, Ross MacPhee, another key advisor, with media savvy and wit puts situations like this in perspective: "It was a little bit like chalk and cheese. We had different priorities and they didn't

necessarily pair up well from time to time." But statistics are a common denominator for scientists and television programmers. Television ratings measure a film's success by the number of households tuned in and in viewership fluctuations in quarter hour increments. And there are other significant numbers: the higher the profile of a film, the more important the ad sales. Fortunately, our science advisors knew that to get their message across, we would have to keep the audience in their seats.

"For event tv, a paleontological expedition is hard to make continually interesting," quipped MacPhee, a specialist in vertebrate zoology / mammology, who came to Siberia to "hunt for pathogens" and to take DNA tissue samples from mammoth and other Pleistocene fauna, "-- even if you're dealing with something huge and iconic like a mammoth. You wanted nice decisive tv minutes -- something interesting that can be found and described fully in seconds. But the way fieldwork really works -- you keep casting about and most of the time it's somewhat like gardening. It has its intrinsic interests if you're interested in gardening to begin with. Otherwise, it's hard to understand why grown men would be stooped over looking for bits of bone in the beach."

Time and again at home and in the field, MacPhee, Mol, and other scientists patiently handled our inquiries, showing us how to 'read' the fossil record, by pointing out markings and colorations on tusks and bones that he and his colleagues must literally dig up to do their work. As Mol puts it, "There are no stupid questions. You have to explain everything again and again -- even for scientists."

But there are benefits to having a film crew tagging along when your hunting grounds lie at the edge of the Earth. Wistfully recalling an ancient musk ox skull he found on the shore of Lake Taimyr a summer ago, Dick Mol says, "I was very excited about this...to find a skull and have an eyewitness. It's important to show how interesting paleontology is... (pausing) Pity that skull is in Khatanga (in the ice cave that holds the Jarkov mammoth remains) instead of my home."

#### *priorities of a good story*

Myth #1 about the media: we never let the truth get in the way of a good story. Though it may be hard to believe, our film team was determined [according to my ability and my judgement] to first do no harm, a little bit like physicians taking

the Hippocratic Oath, though without the life and death consequences.

Nevertheless, the potential for running amok always lurks. Nowhere was this more evident than in the design of our 3-D computer animation. State-of-the-art graphics require months to create. It takes 180 hours to render the fur of just one woolly mammoth. Given our heart-stopping deadline and an inflexible global premiere airdate, much of the animation had to be completed while scientists were still in the field. This posed a number of filmmaking challenges. Some were resolved more successfully than others, according to Dick Mol, who worked hand in hand with our team from the British animation company *Skaramoosh* to create accurate models of the woolly mammoth, the woolly rhino and other Pleistocene megafauna in a flurry of faxes, e-mails, phone calls and trips across the English Channel.

One of our lesser moments according to the paleontologist: "They [the animators] created a wonderful model of the woolly mammoth ... and then they started to work while we were off in Siberia. When I saw the results of the models they made, all the mammoths had the same size tusk no matter male or female. Based on the tusk size, it looks like a male was giving birth to the Jarkov mammoth!" Without enough time to render the appropriate corrections, we had to do some creative editing.

On the other hand, a beautiful and complex animated sequence tracing the ancestry of the mammoth from the earliest Proboscidean – the pig-like *Moeritherium* -- to the trunk and tusked *Gomphotherium* – the animal that would give rise to elephants and ultimately *Mammuthus primigenius*, the woolly mammoth – worked well for everyone.

Several stories below the streets of Khatanga – a town of 5,000 people, north of the Arctic Circle on Siberia's Taimyr Peninsula – a permafrost cave has housed the Jarkov mammoth (along with alcoves of fish and reindeer stored for local use) since it was flown off the tundra almost two years ago. It is a crude laboratory for a modern scientist, kept at a bone-chilling temperature of minus 15 degrees Celsius. It is also a difficult filming location, requiring creative camerawork, superior lighting skills and imagination.

For hours at a time, we observed and filmed an international team of paleontologists roping the mammoth block into a grid and melting it down centimeter by centimeter with a dozen hairdryers

(Bernard Buigues' experiment in strategic melting initiated back in 1999) as the scent of ancient elephant wafted into the cavern. Ever so slowly, signs from the Ice Age emerged from the permafrost – long wiry hair, wool, and still green Pleistocene vegetation.

Sediment containing pollen and insects was set aside for analysis by experts in laboratories in Europe and across the globe. (I would later see some of these perfectly preserved microfossils under the microscope of University of Amsterdam paleobotanist Bas van Geel. It is impossible not to be enthralled by the explanations of a scientist so impassioned about microfossils that he can help you see a lost world in a grain of pollen.) By the end of the two month shoot, with less than three percent of the block melted, the field scientists would uncover flesh and displaced single vertebrae, suggesting that the carcass was not intact.

Spending more than 10 hours a day in a mammoth refrigerator inevitably creates a bond between scientist and film crew. There's a mission to accomplish, a sense of teamwork, a pride in our collective endurance, and the reality of sharing an incredible adventure. Negotiations regarding the documentary filming, such as: where in the cave our tusk expert will gather his specimens, how many camera angles and "takes" we must film to get enough coverage for our editorial wizard to create visually exciting sequences in the cutting room, and who's to work on what quadrant of the mammoth are finalized with ease, as we reach -- through excitement and fatigue -- toward a common goal. Emerging from the cave after midnight, the loners among us are treated to the ultimate prize. Time and space to collect one's thoughts in the still of the Arctic night -- and there is always the thrill of the aurora borealis.

#### *who's priorities?*

A stone's throw from the Khatanga airstrip, in a ramshackle building known as the bank, Ross MacPhee has been wielding a hand drill for a greater part of the day. He is taking bone samples for DNA analysis and radiocarbon dating of some fresh-looking specimens that he and colleagues Dick Mol and Alexei Tikhonov (zoologist and scientific secretary of Russia's Mammoth Committee in St. Petersburg) believe lived at the end of the Pleistocene. They're mammals ranging from the woolly mammoth and woolly musk ox to the wolf and cave bear. MacPhee's goal is to

determine how hard the accepted dates of extinction (estimated at 9,600 years ago) are here on the Taimyr Peninsula and he knows that we'll be interested in the results.

Myth #2 about scientific experts: scientists feel that simple truths stated publicly carry more scientific weight than complex questions or outright uncertainties. From empirical evidence, I have no doubt that scientists revel in complex truths, though they may in fact fear that explanations thereof will fail to satisfy the media and their audience. Fears not unfounded given Hollywood's proclivity for neatly sewn up story lines.

But it's the uncertainties that make life, science, and documentary films interesting. There would be no point in adventuring if one could predict the outcome in advance. I can only hope that my films raise more interesting questions than can possibly be answered in a 90 minute exposé. "Truth" is comforting but it is rarely immutable.

Watching him work, I get the impression that Ross MacPhee enjoys confronting the unknown. MacPhee, a veteran of other Arctic expeditions, is on the scene primarily to investigate his hypothesis that disease (rather than climate change or hunting by man) may have killed the woolly mammoth. It's an extinction theory I secretly and irrationally find enticing due to the staggering lack of evidence in Siberia to date, which MacPhee is the first to admit: "The whole issue is that you have to be humble before the evidence. The head can talk, but when it comes to drop-dead demonstration of an argument, it all gets attenuated in time – because lab tests and a lot of 'futz' have to be done before you can say much at all. How do you ever capture something like that in a documentary? At the end of the day, I'm conservative about what I can say to not incur derision of my colleagues by going out on a limb. (*laughs*) I'm already out on terminal branches."

MacPhee is probably secretly relieved that we are not going after ratings by dangling the possibility of cloning the Jarkov mammoth – a notion MacPhee soundly rejects, but a subject that intrigues many Discovery viewers, according to an in-house survey. (With a mountain of evidence against mammoth cloning, it would be disingenuous of us – and some might argue irresponsible -- to suggest that it was possible today, but we did take time to address the issue.)

For our cameras, MacPhee goes on to outline and argue the three prevailing extinction theories

in a way I know will appeal to our audience. His answers are clear, and as irony-free as possible given my request that he limit his refreshingly large vocabulary for the consumption of a television audience. He is obviously wise to the advice an executive producer from Discovery Channel had given Dick Mol during the shooting of the first film: "Dick, an answer should never be longer than 17 seconds. A quick sound bite frequently conveys the correct impression more powerfully than a 10 minute answer."

And herein lies the crux of most of the misunderstandings between scientists and filmmakers – the former searching for answers to age-old mysteries – such as the extinctions of the last Ice Age – and time to explain them. The latter seeking ways to effectively convey new ideas to an audience hungry for answers but travelling at high speed and on overload down the 'information superhighway.' How do we get their attention without billboards and neon signs?

"People who are good on camera know what they want to say, have sorted it out, and make sure that they pick up on things that are most important," says a reflective Ross MacPhee – and he's absolutely accurate. "It's not merely what you say ... but also the emphasis and pauses. If you're too close to the subject, you're familiar with the material and feel you don't need to underline the point. But you really need to say, 'This is important ... look at what I just said' and hook it back into your narrative. It's a simple thing to do but it takes time. Because [scientists] have a lot to do, they don't think it's a good investment."

"Scientists are interviewed, spend two or three days of their time and see one and a half minutes of themselves in the film," adds Dick Mol. Some may be frustrated, he admits, unaware that the pearls of information, that make a memorable documentary usually rise out of a vast pool of footage.

We are all on a quest. Filmmakers are engaged in a creative process. In my case, to tell a story so compelling in both style and content that it will stop channel surfers in their tracks, ensure my future employment and – in a more personal and profound way – satisfy my own intellectual curiosity.

Scientists are looking for facts. Not facts in a void, but new, publishable insights that will help to fuel future research projects. The jury is still out on whether media exposure from high-profile television specials like ours is the quickest path to

hefty scientific research grants, but it probably doesn't hurt the chances. Meanwhile, as of this writing, MacPhee, Mol, and four other participants in our last film, are in the final stages of co-authoring a paper on "extinction dynamics" of late Pleistocene megafauna on the Taimyr Peninsula.

Filmmakers and scientists are different animals, but we have a lot in common. We both have to raise a lot of questions, whether or not there are obvious answers or time enough in a programming hour to explore all the issues in depth. We both have to wrestle with the idea of how much information to share and what to 'edit out.' In the end, we're left with what is ... and what isn't. A conundrum for both scientist and documentarian – as well as the impetus to forge

ahead with the next paleontological dig, Arctic expedition or documentary film.

Adrienne Ciuffo is an independent producer / writer of non-fiction films based in southern California. Her recent productions include *Prehistoric Sharks*, *Diamonds of Russia*, and the Emmy award winning specials *Raising the Mammoth*, and *Land of the Mammoth*. Ciuffo specializes in the making of science and adventure films and, whenever possible, adventurous science. Among other venues, her work can be seen on Discovery Channel and National Geographic Television. To contact Ciuffo and her production company, please e-mail: [adrienneciuffo@earthlink.net](mailto:adrienneciuffo@earthlink.net).

## Conferences and Calls for Papers

There will be a conference on *European Research Area or National Innovation Competition? Technology Policy in the European and Comparative Perspective*, on November 9-10 2001 in **Karlsruhe**. The conference language will be English, deadline of the call: August 20th. In the middle of intensive discussions on new approaches for a European innovation and technology policy ("European Research Area"), the conference is aimed at ex-changing views and insides on these new developments both from a theoretical (changes in governance structures and processes in the field of innovation policy) and empirical perspective. It shall include contributions with a primarily European perspective as well as comparative studies on changes of national innovation policies vis-à-vis the European integration in this area. The conference is jointly organised by the Committee on Politics and Technology of the German Political Science Association and the Fraunhofer Institute for Systems and Innovation Research, Karlsruhe. You can find the full text of the call under <http://www.uni-konstanz.de/FuF/Verwiss/Schneider/Akpt/> (German and English) or <http://www.isi.fhg.de/> (English)

The English Centre and Language Centre of the **University of Hong Kong** are hosting a sequel to the successful 1996 Knowledge & Discourse conference. KD2, entitled *Knowledge & Discourse: Speculating on disciplinary futures*, will be held from Tuesday June 25 to Saturday June 29, 2002 at the University of Hong Kong. KD2 aims to explore a range of thematic strands and welcomes submissions that respond to these strands. The themes and their keynote speakers will be: Universities and knowledge production; Critical approaches to literacy; Voices and culture in the classroom; Natural, social and virtual worlds; Discourses of popular culture; Disciplinary discourses and practices; Workplace discourses and practices; and Gender, ethnicity and identity. The conference will also feature a debate between Bruno Latour and Steve Fuller, and a retrospective of the films of Trinh Minh-ha.

KD2 will include 30 minute talks, colloquia, poster presentations, and pre-conference workshops with plenary speakers. Abstracts should be submitted to the conference secretariat via the website or email addresses listed below. Contributors who have papers accepted should submit a draft paper by May 31, 2002 if they seek inclusion in the conference Proceedings. Deadline for Abstracts: November 30, 2001. Proceedings of the 1996 conference may be viewed at <http://ec.hku.hk/kd96proc/>; a further selection, entitled "Knowledge and Discourse: Towards an ecology of language", will be published by Longman in their Language in Social Life series in the summer of 2001. For more information, see the conference website: <http://ec.hku.hk/kd2> or email: [kd2query@hku.hk](mailto:kd2query@hku.hk). Contacts: Conference Chair: Colin Barron [csbarron@hkusua.hku.hk](mailto:csbarron@hkusua.hku.hk) & Associate Chair: Nigel Bruce [njbruce@hku.hk](mailto:njbruce@hku.hk)

The International Executive Committee for the Conferences on *The Inspiration of Astronomical Phenomena* (INSAP) wishes to announce the fourth meeting in the series INSAP IV, to be held at Magdalen College, **Oxford** (UK) August 3-9, 2003. In this meeting mankind's fascination with the sky by day and by night will be explored. Such fascination has been a strong and often significant element in human life and culture. The conference will provide a meeting place for artists and scholars from a variety of disciplines (including Archaeology and Anthropology, Art and Art History, Classics, History and Prehistory, the Physical and Social Sciences, Mythology and Folklore, Philosophy, and Religion) to present and discuss their studies of the influences that astronomical phenomena have had on humanity. The first three meetings (Castel Gandolfo, 1994; Malta, 1999; Palermo, 2001) successfully brought together, often for the first time, people from just such a range of disciplines to address topics of common interest. Papers from the first meeting were published in "Vistas in Astronomy" (1995) and in "Leonardo" (1996); those from the second will appear shortly in book form, "The Inspiration of Astronomical Phenomena: Edition Malta"; those from the third will appear in 2002 in a

special issue of "Memoria della Società Astronomica Italiana". These papers (described in our Website under each INSAP Conference) give an idea of the range of subjects presented at these meetings. A similar publication is planned for the fourth conference. The next meeting will be held in Magdalen College, Oxford (UK), starting Sunday, 3 August 2003. Further information on INSAP IV and on the earlier conferences, together with an application form (on-or-after 1 September 2001) for the upcoming meeting, can be found on our Website (<http://ethel.as.arizona.edu/~white/insap>) or obtained from the undersigned. Attendance will be by invitation from among those applying. Applicants need not present a paper or a poster: "observers" are welcome, but must also apply as space is limited. All presentations and discussions will be in English. As has been customary in the past, the Vatican and the Steward Observatories will be among the sponsors of the Fourth Conference. For further information, contact: Dr. Valerie Shrimplin, University of Luton: Co-Chair, Local Organizing Committee ([valerie.shrimplin@luton.ac.uk](mailto:valerie.shrimplin@luton.ac.uk)) Mr. Nick Champion, Bath Spa University College: Co-Chair, Local Organizing Committee ([ncampion@caol.demon.co.uk](mailto:ncampion@caol.demon.co.uk)) Professor David W. Pankenier, Lehigh University: Coordinating Member, International Executive Committee ([david.pankenier@lehigh.edu](mailto:david.pankenier@lehigh.edu)).

The 6th ICCR & EA Semmering *S&T Forum* will be held on 6-8 December 2001 at the Institut d'Etudes Politiques de Lille, France. Its aims are to offer the countries of Central and Eastern Europe access to international expertise relevant to the transformation of their university and research systems; to confront transnational experience of relations between public and private research; and to improve, in the perspective of enlargement, mutual knowledge across European borders. The 6th Forum also fits into the broader context of discussion leading up to 6th European Framework Programme. The call for paper is now out and is open till September 30, 2001. Working languages of the Forum will be English and French. (Please ignore the closing dates of earlier version of this call.). The call can be seen on our homepage, <http://www.iccr-international.org/events/>

The Third Asia-Pacific Symposium on *Press and Scientific and Social Progress* will be held in **Beijing** on November 3-6. The theme of this meeting is "Internet and Media Revolution". The English-language web site with a call for papers and registration details is at: <http://chenno7.xiloo.com/apsp2001/conference/english.htm>. All contact details are listed on that site.

*Transforming Spaces: The Topological Turn in Technology Studies* is the title of the international conference to be held in **Darmstadt**, Germany, March 22-24, 2002, organized by the post-graduate school "Technology and Society" at the University of Technology Darmstadt (<http://www.ifs.tu-darmstadt.de/gradkoll/index.html>) with financial support from the German Research Council. This conference will problematize the spatial character of the relationship between technology and human beings. It addresses two interrelated questions: To what extent do machines and media organize society three-dimensionally-thus ordering the spaces in which modern life takes place? And, conversely, to what extent do material and communicative structures open up new mental and physical spaces-thus transforming the boundaries of daily life? To denote our explicit concern with spatiality we propose the mathematical term "topology." The days are gone, when "technology" meant only the material means used by rational human seeking goals in accordance with principles of maximum efficiency and economic return. Today, scholars in the interdisciplinary field of "technology studies" emphasize the symbolic and discursive character of our artifact-saturated universe, as well as the machine's subtle perpetuation of social inequalities and political conditions. These scholars have begun to discuss technology as a medium, as a human-created "ambiance" that infiltrates interpersonal relations and permeates society. Focusing on the spatial dimension of materials and media, this conference intends to shape developments in the field. Technology has become a kind of second nature in modern life. For instance, cell telephones, computers, and the internet enable us to become more independent of physical location. The death of distance has been declared. Simultaneously, however, they have influenced mobility and cognitive patterns, as well as re-drawn the boundaries between the

private and public spheres. By bringing out the spatial character of modern technology, the conference takes seriously its "topological" nature-both on a physical and discursive level. And, by focusing on urban structures, simulation techniques, and visualizing media in daily life, it intends to investigate the spatial character of technology in various settings and from various theoretical points of view. Technologies, we argue, are far more than passive physical presences. They mediate between human beings, they bridge physical distance, and they contribute to the transformation of individual identities. They allow people to interact at new places, they open up new mental spaces, and they help us to visualize new arenas for action. The spatial character of the human-made world is not limited to computers and other information technologies. Machines and media also impose on the world a certain multi-dimensional "order of things." In urban settings especially, buildings, streets, and lighting systems make up a set of material "dispositives" that strongly define what "degrees of freedom" citizens may enjoy. To guarantee insightful introductions to the various topics, four internationally outstanding plenary speakers have already accepted the invitation; cf. program below. One-page abstracts for papers, accompanied by a one-page CV, may be sent to Professor Mikael Hård, Department of History, Technical University Darmstadt, Schloss, DE-64283 Darmstadt, Germany, [hard@ifs.tu-darmstadt.de](mailto:hard@ifs.tu-darmstadt.de), before Nov. 1, 2001.

The *International Working Group in History of Philosophy of Science* (HOPOS) will hold its fourth international congress in **Montreal**, Canada, June 21-23, 2002. The congress is being held in cooperation with Concordia University, McGill University, the Université de Montréal, and the Université du Québec à Montréal. The conference is open to scholarly work in French or English on the history of philosophy of science from any disciplinary perspective. Submissions of abstracts, in French or English, of papers of approximately 30 minutes' reading length, and of symposia of three to four thematically related papers will be considered for the program. Plenary speakers: François Duchesneau (Université de Montréal) and Don Howard (University of Notre Dame). Guidelines for Submissions: Abstracts of individual paper submissions should be between 250 and 500 words in length. Panel proposals

should include on panel abstract, names and contact addresses of all participants, and abstracts of 250 words for each of three to four papers. All submissions should arrive by 1 January 2002. Notification of acceptance of submissions will be provided by 1 March 2002. Preferred format for all submissions is plain ASCII text or RTF attachment submitted by electronic mail to [hpos2002@arts.ubc.ca](mailto:hpos2002@arts.ubc.ca) with "HOPOS 2002 Submission" in the subject line of the email. Other submissions should include one paper copy and one copy in plain ASCII or RTF format on a 3.5" DOS diskette and be sent to: Alan Richardson, Co-Chair, HOPOS 2002 Program Committee, Department of Philosophy, 1866 Main Mall - E370, University of British Columbia, Vancouver, BC V6T 1Z1, CANADA.

*Postmodern Practices: MediaTraces - DiscourseBodies - TradeMarx*, the 4th interdisciplinary, international (post)graduate conference on Postmodernism at the **University of Erlangen/Nuernberg** (Bavaria, Germany) to be held on November 23rd - 25th, 2001 has issued a second call for papers. The Departments of Sociology, Political Science and American Literature invite young scholars (from graduate students to assistant professors) to participate. Possible topics include, but are not limited to: postmodern criticism - criticizing the Postmodern; postmodern politics - political postmodernism; Marxism and the Postmodern; language and power; truth as difference; alterity as intercultural practice; strategies of identity in the simulacrum feminism and queer theory; re-presentation and the politics of the body psychoanalysis and phallogocriticism; jouissance as surplus value; difference as a symptom; transnational media rhizomes; 'I' is a commodity; the sublime and the affordable; p-commerce: utilizing the postmodern; the true, the beautiful and the goods - the end of philosophy and ethics?; postanalytical philosophy vs deconstruction music cultures in late capitalism: song\_track\_loop; science fiction and postmodern utopia - historiography, narration and biography; hyperfiction and net literature; the fantastic in literature, film and the fine arts; echoes and reflections in art and literature. Deadline for paper proposals: 15th September, 2001, (other participants may register till November 20th). Please register on our online submission form at <http://www.gradnet.de>. Feel free to contact Mark: [info@gradnet.de](mailto:info@gradnet.de)

## Opportunities Available

The Centre for the History of Science, Technology and Medicine at the **Imperial College of Science, Technology and Medicine, London**, offers a permanent lectureship position. While there is some preference for an historian of medicine/life sciences, all areas of expertise will be considered. The closing date for applications: 31st August 2001. Salary will be in the range £18,731 - £30,967 plus £2,134 London Allowance, Cost of living award pending. There is no application form as such. Please send a full curriculum vitae with the names and addresses of three referees, and a sample of recent work, to Prof. David Edgerton, Director, Centre for the History of Science, Technology and Medicine, Sherfield Building, Imperial College, London SW7 2AZ, UK. Informal enquiries to d.edgerton@ic.ac.uk, telephone 44 207 594 9351. Further detail is available at <http://www.hstm.ic.ac.uk>

**ETH ZURICH** has an opening for a Professorship in Conjunction with the Position of the Director of the Collegium Helveticum. Successful candidates will have an outstanding research and teaching record in a branch of science, engineering or the humanities, and are expected to be willing and able to establish the dialogue between the different scientific cultures. The Collegium Helveticum is an institute for advanced studies where the exchange between the sciences and humanities is cultivated by interdisciplinary research and teaching - as well as by international exchange. A close collaboration with the University of Zurich is desired and might be extended in the future by the foundation of a corresponding joint institute for advanced studies. Thus, ideal candidates would have a dynamic, engaging personality and management skills. A good command of the German language would be an asset, but is not a requirement. Please submit your application with CV, publication list and further documents of interest until October 15, 2001, to the President of the ETH Zurich, Prof. Dr. Olaf Kübler, ETH Zentrum, Raemistr. 101, HG F 52.1, CH-8092 Zurich.

The journal *Science & Public Policy* is looking for new people interested in reviewing books that can be loosely identified as touching on science & technology policy issues (even if this is not central to the book's topic). The guideline for review length is around 1000 words, with a 2 month deadline from receipt of the book. Please contact Paul Rosen with short biographical details if you would be interested in seeing the list of books currently available - or if there is a book you'd like to suggest reviewing. A somewhat out-of-date website at <http://www.scipol.demon.co.uk/spp.htm> contains further information on the journal. Contact details: Dr Paul Rosen, Science & Technology Studies Unit, Department of Sociology, University of York, Heslington, York, YO10 5DD, UK, Tel. 44 1904 - 434743, Fax: 44 1904 - 433043, Web: <http://www.york.ac.uk/org/satsu/>

The Surveillance Project, based in the Sociology Department at **Queen's University in Canada**, seek a post-doctoral fellow to join the team researching Surveillance, Risk, and Social Ordering in a Global Information Society, funded by the Social Sciences and Humanities Research Council of Canada under the Knowledge-Based Economy Strategic Grant theme. The successful candidate will develop, construct, and contribute to projects in conjunction with team members. These currently include the role of surveillance technology, including biometrics, in capturing the movement of people across borders; electronic commerce, virtual worlds, Internet solicitation and information privacy; the development of smart cards in federal and provincial government departments. Some knowledge of surveillance and privacy issues is an asset, and applicants should have social science training, preferably a PhD in Sociology. There is a possibility that some teaching opportunities may be available during the tenure of the post-doc. The position will start in mid-September 2001 with possible renewal for a second year in September 2002. The amount is \$26,000 in the first year. For more information see <http://qsilver.queensu.ca/sociology/Surveillance/intro.html> or contact David Lyon, [lyond@post.queensu.ca](mailto:lyond@post.queensu.ca). Please send a curriculum

vitae, transcripts, three letters of reference, a sample publication or work-in-progress, and a letter of application by August 15 2001 to David Lyon, The Surveillance Project, Sociology Department, Queen's University, Kingston, Ontario, Canada K7L 3N6. Canadian citizens and permanent residents will be considered first.

At the **University of Calgary**, the Faculty of Communication and Culture and the Faculty of Science jointly invite applications for a junior chair in Science Studies to support interdisciplinary work that crosses traditional disciplinary boundaries. We seek an individual who can catalyze the interactions between scientists whose interests will increasingly interact with public policy, and those experts on the human side of issues whose understanding of social and cultural issues would deepen through a connection with scientific disciplines. In Communication and Culture, extant expertise includes the social and cultural context of ICT, of biotechnology, of innovation systems, and of human ecology in the North. In Science, strong groups exist in aquatic ecology, plant physiology and plant biotechnology, applications of geophysics to greenhouse gas emission problems (CREWES consortium), human computer interface, and environmental science, including the use of stable isotopes in studying anthropogenic effects. We seek candidates whose research and teaching background and interests complement this expertise. The successful applicant would be expected to develop an active research program and supervise graduate students, as well as to contribute to and teach courses in both the Science, Technology and Society and the Natural Sciences programs offered by the two Faculties. The teaching assignment will be consistent with the primary research focus of the Canada Research Chairs. A PhD is required of an individual who will be eligible to apply for NSERC funding. Applications, including a CV and three letters of reference should reach Dr. Kathleen Scherf, Dean, Faculty of Communication and Culture, 2500 University Drive NW, Calgary, AB, T2N 1N4 by 15 September 2001. Anticipated appointment date is 1 July 2002.

**The Chemical Heritage Foundation** Invites Applications for its 2002-2003 Fellowships. The

deadlines are December 1, 2001 for academic year fellowships, and February 15, 2002 for summer fellowships. Applications must include a research proposal of no more than 1,000 words that addresses the relevance of resources at CHF to the applicant's research plans. This proposal should also explain how the work advances scholarship and how the outcome might be published. Please include a complete c.v. and arrange for two letters of reference to be sent directly to the Foundation. For more information, please see our website at [www.chemheritage.org](http://www.chemheritage.org) or email [fellowships@chemheritage.org](mailto:fellowships@chemheritage.org). All applications should be sent to: Fellowship Coordinator, Chemical Heritage Foundation, 315 Chestnut Street, Philadelphia, PA 19106-2702, Fax: 1 215 925 1954 20, email: [fellowships@chemheritage.org](mailto:fellowships@chemheritage.org). The fellowships are these:

**Gordon Cain Fellowship.** The Cain Fellowship is open to a scholar with a Ph.D. who will carry out historical research on the development of the chemical industries. The outcome of this research should further understanding of the relationship between technology, policy, management, and entrepreneurship, and shed light on the complex development of modern society and commerce. Minimum stipend, \$43,000.

**Edelstein International Fellowship.** The Edelstein Fellowship is open to established scholars in the history of the chemical sciences and technology, whose time will be divided between CHF and the Edelstein Center for History and Philosophy of Science, Technology, and Medicine in Jerusalem. Minimum stipend, \$36,000.

**Edelstein International Studentship.** The Edelstein Studentship is an academic year fellowship open to a student in the history of the chemical sciences and technology who has completed all requirements for the Ph.D. except the dissertation. Time will be divided between CHF and the Edelstein Center in Jerusalem. The studentship supports dissertation research and writing. Minimum stipend, \$16,000.

**Eugene Garfield Fellowship.** The Garfield Fellowship is open to candidates with a Ph.D. in the chemical sciences, information science, or the history of science, technology or medicine. The Garfield Fellow should plan to research the history of information science as it relates to the chemical sciences or chemical process industries. Minimum stipend, \$41,000.

#### **John C. Haas Fellowship.**

The Haas Fellowship is open to scholars with a Ph.D. Preference will be given to candidates whose projects will enhance public understanding of the role of the chemical industries in relation to environmental, health and safety issues. Minimum stipend, \$38,000.

#### **Charles C. Price Fellowship.**

The Price Fellowship is open to scholars with a Ph.D. Preference will be given to candidates whose projects deal with polymer history; however, applications in other fields, such as history of chemistry, petrochemicals, pharmaceuticals and biotechnology, are also encouraged. Minimum stipend, \$32,000.

#### **Summer - Glenn E. and Barbara Hodsdon Ulyot Scholarship.**

The goal of the Ulyot Scholarship is to advance public understanding of the importance of the chemical sciences to the public welfare. The scholar will spend a minimum of two months in residence at CHF during the summer of 2002, conducting research on the heritage of the chemical sciences. Minimum stipend, \$4,500.

#### **Summer - Societe de Chimie Industrielle (American Section) Fellowship.**

The American Section of the Societe de Chimie Industrielle, in conjunction with CHF, invites applications for this fellowship. The purpose of the fellowship is to stimulate public understanding of the chemical industries, using both terms in their widest sense. Applications are encouraged from writers, journalists, educators, and historians of science, technology and business. The fellow will spend a minimum of two months in residence at CHF during the summer of 2002. Applicants should specifically show how the project will further public understanding of the chemical industries. Minimum stipend, \$12,000.

#### **Research Travel Grants.**

CHF offers travel grants for research at the Beckman Center for the History of Chemistry and the Othmer Library. Applicants should submit a curriculum vitae, a one-page statement of their research project and the applicability of area resources, budget estimate, and arrange for a letter of reference to be sent directly to CHF. Grants are in the \$500 range for researchers within the U.S. Individuals traveling internationally may be considered for grants in the \$1000 range. For deadlines, please see our website or contact [travelgrants@chemheritage.org](mailto:travelgrants@chemheritage.org).

## Net News

Psici-com is a searchable web site which describes and indexes quality web sites on the public understanding of science, science communication and science in society. It include discussion forums as one of the resources on the web site. Psici-com is a searchable catalogue of internet resources that have been selected and catalogued by Information Officers at the Wellcome Trust for the benefit of the UK public understanding of science community. This service is hosted by OMNI. For more information, contact Louise Simon, Information Officer, Wellcome Trust Library for the History and Understanding of Medicine, 183 Euston Road, London NW1 2BE, Telephone: +44 (0)20 7611 7316, Fax: +44 (0)20 7611 8726, email [l.simon@wellcome.ac.uk](mailto:l.simon@wellcome.ac.uk)

Sage Publications has recently published an international *Handbook of Disability Studies* (Albrecht, Seelman and Bury, eds). The Handbook has been developed from the standpoint of sociology and sociology of science. There is a chapter on Science and Technology Policy. See [sagepub.co.uk](http://sagepub.co.uk).

There are websites about the work of Jacques Ellul and after. Ellul scholars and freelance Ellul enthusiasts are working in association - see details at [www.ellul.org](http://www.ellul.org) (français/English) - it's "not an antiquarian society interested only in a reverent inspection of Jacques Ellul's works; it is, in the spirit of Ellul himself, a movement to encourage the extension of a serious critique of technological civilization." The site is just about to receive a thorough overhaul to remove its frames; to link to it now, use <http://www.ellul.org/index.htm>. The *Journal Ellul Forum* is so far only a print journal, but is excellent, with details on the web site also. There's a collection of Ellul links in English at <http://world.std.com/~jchat/ellul/web.htm>.

Infociencia.Net is an Internet-based communication and interaction space about Science, Technology and Society and related themes, as public communication of science techniques, science education, technological

options evaluation and innovation management. This makes InfocienciaNet a site about science communication and related topics more than a science vulgarisation site. This portal has as aim to operate as a publication and communication space, and also as an incentive for the intellectual production of students, professors and other collaborators of the Master Ciencia, Tecnologia y Sociedad (CTS) from University of Salamanca, Spain, responsible for this initiative. The project also reflects a strong orientation towards the Spanish speaking public, since there seems to be an absence of similar resources outside English language. InfocienciaNet also posses an associated discussion list, [infocianet@es.egroups.com](mailto:infocianet@es.egroups.com), for discussion about CTS subjects and which serves as a newsletter promoting new content in the site. To join [infocianet@es.egroups.com](mailto:infocianet@es.egroups.com) send a email message to [InfocienciaNet-subscribe@es.egroups.com](mailto:InfocienciaNet-subscribe@es.egroups.com) or use the subscription form available at the site. InfocienciaNet was first presented during the 6th International Conference on Public Communication of Science & Technology, in Geneva: <http://visitservice.web.cern.ch/VisitsService/pcst2001/proc/Quintanilla-Sabatini/pcst2001-quintanilla.htm>.

FWIW, the VisVIP tool from NIST (public domain software) generates an automatic graph layout for a website, which can then be customized by hand. The main purpose of VisVIP is to illustrate user navigation paths thru a website, but the website layout still works even in the absence of any path data. See <http://www.nist.gov/webmetrics/> for details. VisVIP presents a 3D visualization of subjects' navigational path data through the website. It automatically lays out a 2D graph of the website. Each node of the graph represents a web page, and edges represent links between pages. Nodes are color-coded by type: blue for HTML, purple for directories, green for images, and so on. Because URLs tend to be long, a briefer nickname is generated for each page. The usability engineer (UE) has several options to simplify the graph: nodes of a given type, or those not on or near a userpath, can be suppressed. Also, if a graph is highly interconnected, the UE can specify that the site be pictured as a tree emanating from a selected root node. Once a satisfactory graph of the website has been obtained, the UE can select which userpaths to

display. These paths are represented as spline curves, resting on the plane of the website graph. The time spent at each page is depicted as a dotted vertical line with its base at the appropriate node. Curvy vertical arrows into and out of the plane mark the beginning and end of each user path. Each user is assigned a unique color, so that several paths can be shown at once.

Public communication of science and technology is critical in a world thoroughly interwoven with science and technology. The International Network on Public Communication of Science and Technology (PCST) brings together individuals from around the world who are active in producing and studying PCST. Since 1995, the network has sponsored an electronic mailing list, PCST-L (see below for instructions on how to join). Now, the network has a website at <http://www.PCSTNetwork.org>. The PCST Network includes: Science journalists, Science museum and science center staff, Science theatre directors, Academic researchers who study aspects of PCST Scientists who deal with the public, and Public information officers for scientific institutions. The PCST Network sponsors international conferences (the next one will be in December 2002 in Cape Town, South Africa), electronic discussions, and other activities to foster dialogue among the different groups of people interested in PCST, leading to cross-fertilization across professional, cultural, international, and disciplinary boundaries. The PCST Network seeks to promote new ideas, methods, intellectual and practical questions, and perspectives. To participate in the electronic discussions, join the PCST Network's electronic mailing list, PCST-L, by sending a message to [LISTPROC@CORNELL.EDU](mailto:LISTPROC@CORNELL.EDU) with the message SUBSCRIBE PCST-L YOURFIRSTNAME YOURLASTNAME.

Research on computer games, computer gaming and the gaming industry is a young but rapidly developing field of inquiry. In an attempt to support exchange of ideas and promote cross-disciplinary discussion in the area a new discussion list has been setup. The Digiplay list aims to provide an international forum for the exchange of ideas, information and analysis on the gaming industry and gamer research. Multidisciplinary in nature, it is aimed primarily