

EASST *Review*

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EDITORIAL

CHANGED BUT UNDESCRIBED? WHAT STS COULD SAY ON THE RESEARCH PRACTICES OF SOCIAL SCIENCES

Andrei Kuznetsov

It's amazing how much STS has to offer to say about contemporary social sciences. STS began as a vigorous and dynamic substantive field focused on the natural sciences and technology development and then expanded its scope to a variety of phenomena. Now it is considered not just as a subfield centered on some particular subject matter but a method providing a whole new approach to the *'hybrid collectifs'* we used to call societies. STS has considerably changed not only the agenda but also the very practices of the social sciences. And, yet, isn't it surprising that STS has invested so little effort in describing and understanding the practices of the social sciences?

We barely have studies of social scientific knowledge production comparable to now 'classical' in-depth laboratory ethnographies like the ones of Lynch, Knorr Cetina, and Latour or the analyses of controversies and consensus formation in natural sciences by Collins, and Pinch. Where are the books, we could ask, that trace multitudes of actors and crucial practicalities behind social sciences big theories, research projects and historical diagnoses in a mode equivalent to *Leviathan and the Air-Pump*, *The Pasteurization of France* and other outstanding works that did this for the natural sciences?

In the early 2000s STS shifted their focus from 'hard' sciences to 'softer' forms of knowledge in medicine, finance, and economics. For some, economics counts as the 'hardest' and the most formalized of the social sciences. But what about sociology, anthropology, political science, and/or psychology? And what about knowledge practices in humanities? Sure enough, there are some individual research efforts (Lamont, 2009; Law, 2009; Maynard, Schaeffer, 2000). Yet a brief look at two flagship journals (*Social Studies of Science*, *Science Technology & Human Values*) and the last two STS handbooks (Hackett et al., 2008; Felt et al. 2017) suggests there is nothing like "social science studies" that could be recognized as a subfield within STS. Although already in the late 1980s Latour suggested that "social sciences are part of the problem, not of the solution" (Latour, 1988: 161) to understanding the contemporary world of science and technology, it seems that STS still hasn't taken this part of the problem into account seriously enough. Perhaps genuine 'social science studies' do actually exist and it is my fault to overlook them. Perhaps a subfield like this should not exist in order not to reproduce inside STS the notorious bifurcation between 'natural' and 'social' sciences. But if it does make sense to talk about relative neglect of social sciences and humanities in STS as objects of research, then I would seize the opportunity to speculate on why it is so. Let me take my mother-discipline of sociology as an example.

It may well be that the lack of STS research on the production of sociological knowledge is an expression of a particular politics of knowledge in which we are engaged willingly or unwillingly. Perhaps, we are following the lead of the powerful elites of the Euro-American world in their ambition to first control and govern resource-intensive 'hard' sciences and technologies and, more recently, manage risks intertwined with ecology, biomedicine, and digitalization. In this context, sociological knowledge production does not put much at stake for the management of science and technology. The discipline is not as demanding for money as physics and not as 'risky' as biotechnology. Indeed, unlike the natural sciences, sociology is considered a far less powerful tool for shaping the world. Sociologists do not produce weapons, pharmaceuticals, or gadgets. But what do social sciences

actually produce or perform? Ideologies? Facts? Critique? Socio-professional categories? Self-descriptions of societies? Societies themselves? The question we need to pose is how do these 'sociological entities' circulate and hold us together. For this question we still have few empirical answers.

Let me add that sociology is not just ignored in the contemporary apparatus of science and technology. In many parts of the world, sociology is at least since the 1970s recurrently under attack. These attacks are going from other parts of academia, from outside academia, as well as from within sociology itself. So, sociology as many other social sciences and humanities are not only 'soft', but also weak, 'vulnerable', and sometimes endangered sciences. To study its 'mode of existence' is to be engaged in a political epistemology that could have profound political implications for STS. It may go hand in hand with our reflections on new forms of interventions, and inventions in our field.

Engagement with 'soft' and 'weak' sciences would definitely bring new conceptual challenges for STS. For a long time, both positivist and anti-positivist sociologists used a distorted image of natural sciences to define a self-conception of their discipline. Anti-positivist sociologists thought that sociology is special because unlike natural sciences it deals with interpretation, rhetoric, discourse, normativity, situatedness, as well as cultural and political contexts. But STS found all this at the very heart of the natural sciences. So how then to explain the seemingly obvious difference between social and natural sciences when previously held distinctions evaporate? And in what sense are our own studies 'science'? Or are they not? But then again what is the difference?

It seems then that until now STS has 'only' changed social sciences, in various ways. The point, however, is to describe them also.

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STS MULTIPLE

LATTS'S STORIES: EXPLORING THE INFRASTRUCTURATION OF ORGANIZATIONS, CITIES AND SOCIETIES

Olivier Coutard, Valérie November

LATTS IS A MULTIDISCIPLINARY RESEARCH CENTRE EXPLORING THE EMERGENCE AND EVOLUTION OF THE COMPLEX SOCIOTECHNICAL SYSTEMS THAT SUPPORT, OR "INFRASTRUCTURE", MODERN SOCIETIES, WITH A PARTICULAR INTEREST IN NETWORKED INFRASTRUCTURES: THE SYSTEMS HANDLING THE MATERIAL AND INFORMATIONAL FLOWS UPON WHICH SOCIETIES INCREASINGLY REST. FOR DOING SO, LATTS RESEARCHERS HAVE PRIVILEGED A MESOSCOPIC APPROACH CENTRED ON RELEVANT ORGANIZATIONS: THE SOCIOTECHNICAL ORGANIZATIONS OPERATING THESE SYSTEMS AND THE PRODUCTIVE, TERRITORIAL OR POLITICAL ORGANIZATIONS DEPENDENT UPON THESE SYSTEMS. COLLECTIVELY, THEY HAVE CULTIVATED A SPATIAL ORIENTATION; I.E. A SPECIFIC INTEREST FOR THE ORGANIZATION OF SPACE AND THE MANAGEMENT OF SPATIALIZED ORGANIZATIONS. OVER THE YEARS, LATTS DEVELOPED DISTINCTIVE SOCIOTECHNICAL UNDERSTANDINGS OF THE PROCESSES AT PLAY, THROUGH AD HOC COMBINATIONS OF SCIENCE AND TECHNOLOGY STUDIES (STS), SOCIOLOGY OF ORGANIZATIONS, POLITICAL SCIENCE, HUMAN GEOGRAPHY AND HISTORY.

TECHNICAL SYSTEMS, INFRASTRUCTURES, TERRITORIALITIES: FROM THE PRODUCTION OF SPACE TO A SOCIOTECHNICAL PERSPECTIVE ON CONTEMPORARY SOCIETIES

Created in 1985, LATTS (*Laboratoire Techniques, Territoires et Sociétés*; or, Technologies, Territories and Societies) is a multidisciplinary humanities and social science research centre, which brings together sociologists, political scientists, historians and « spatialists » (geographers, planners, architects...) studying the complex sociotechnical systems upon which the large productive, territorial or political organizations in current (and past) societies rest. LATTS results from the integration of two groups: one group based in the *Ecole Nationale des Ponts et Chaussées* (ENPC, allegedly one of the oldest civil engineering schools in the world, created in 1747) studying engineers and their role in organizations (firms, public administrations, public utilities) and the other based in Université Paris 12 (now Université Paris-Est Créteil) studying urban management with a particular emphasis on networked infrastructure systems (water, energy, transport, telecommunications...).

The initial ambition of LATTS was to provide novel understandings of both the spatialization of productive activities (through a combination of economic geography and sociology of firms) and the production of (especially urban) spaces. The centre's founders (Henri Coing, Gabriel Dupuy and Pierre Veltz) aimed at moving beyond, or beside, the then still largely prevailing neomarxist approach (Lefebvre, Castells, Godard). A foundational choice was to research these processes through the study of relevant organizations. It allowed to develop, so to speak, a *mesoscopic* perspective on spatial and urban change, distinct both from "macroscopic", structuralist approaches just mentioned and from "microscopic", interactionist approaches centred on the actions of, and relations between, individual actors. This choice was indeed fully consistent with LATTS's strong connection to an engineering school. And indeed, since its inception, LATTS has been interested in the deeds and the (changing) worlds of engineers and engineering,

in particular *networked infrastructures*: the complex sociotechnical systems handling the material and informational flows upon which modern societies increasingly rest.

This interest for the organizations operating the sociotechnical mediations essential in and for modern societies fuelled from the start the attraction of LATTs researchers toward the then emerging STS community. Indeed they shared, and still share, with other STS scholars a number of convictions: they take technology seriously, but they do not consider that society is determined by allegedly autonomous scientific and technological progress; they believe that technologies are socially shaped, and at the same time they are convinced that technologies in use (Edgerton 2006) produce social effects (much) beyond the particular contexts in which they were initially developed, and they agree that « the material world is not a simple reflection of human will, and (...) one cannot make sense of the history of technology if the material world is seen as infinitely plastic and tractable. » (MacKenzie et Wajcman, 1999, p. 24). In short, they believe that society and technology coevolve; they can be regarded as soft technological determinists.

The relevance of this sociotechnical positioning was comforted over the years by the increasingly complex forms of technicization at play within contemporary societies. In fact, as a result of these evolutions, humanities and social sciences have demonstrated a growing interest in the technological, the material and, relatedly, the ecological dimension(s) of the world.

In this context, STS research and debates within the STS community offered, and still offer today, valuable intellectual resources, epistemologically, theoretically, methodologically, and even politically. In particular, along with many other STS scholars, LATTs researchers have:

- Postulated that, in order to account for the social significance of complex sociotechnical systems beyond generally oversimplifying conventional understandings (and even ideological discourses), it was necessary to “open the black box” of technologies and analyse in detail the practices associated with them. Even though it is obviously not a necessary condition to study technology, it is worth noting here that a majority of LATTs researchers were initially trained as engineers, and some as architects, hence possessing an early acquired familiarity with the internal working of (some) technology;
- Challenged prevailing conceptions that technological change, especially pertaining to large technological systems, should result in unmediated, systematic and uniform effects on social activities, societies and space. In particular, they have documented the variegated configurations of the dynamic relations between infrastructure systems and the territories they serve, emphasizing the crucial mediating role played by stakeholder organizations (state or local administrations, public or private utility companies, etc.) in shaping these relations;
- Been particularly concerned with the political dimension of technologies and technological change, by examining, for example: which social interest support which technological options; who are the winners and losers of a specific “technological choice”; what the attention to the politics of technological choices helps us understand about society (as well as about technology); how the “effects” of a technological choice are produced and what are the political implications of the mediation processes at play; and, from a more reflexive perspective, what possibilities of action and intervention are made possible by the type of “sociotechnical knowledge” produced.

This meso sociotechnical perspective has been preserved until today. LATTs researchers are convinced that the study of the emergence and evolution of the complex sociotechnical systems that support, or “infrastructure”, our increasingly interconnected but uncertain, unequal and informalized world remains highly relevant. And they are convinced that this study requires evidence-based and comparative research aimed at revealing the combined influence of institutional arrangements, tools and instruments, and variegated forms of knowledges on effective practices.

This sociotechnical perspective has been applied to the study of the changes that affect the functioning of urbanized areas, public administrations or manufacturing or service-oriented organizations, and it is gradually extended to the study of evolutions in everyday practices. In the remainder of this short piece, we would like to illustrate how this perspective has allowed LATTs researchers to develop specific approaches and to produce novel insights on the organization of space and the management of spatialized organizations. Indeed, this “spatial concern” is probably what is most characteristic in LATTs’s contribution to the STS community.

THE SPATIALITIES OF LARGE TECHNICAL SYSTEMS

LATTs has a long tradition of research on large technical systems (LTSs) and a large number of LATTs researchers and doctoral students have been involved in this undertaking. LATTs’s specific take on LTSs has been to explore the mutual relations between the development and management of LTSs on the one hand and the organization and functioning of territories, as well as processes of spatialization, on the other.

Early work on these issues within LATTs emphasized the dialectical and dynamic relation between the institutional spaces defined and delimited by political bodies (states, local governments) and the living spaces largely produced by technical networks or infrastructures; in what variegated ways this relation affects modern forms of territoriality (a term by which we mean, broadly speaking, how societies are organizing in space); and how variations in this relation could be accounted for by studying the work of the organizations concerned. In doing so, LATTs researchers have early on reconceptualized “local” contexts as, in fact, cross-scalar (“from local to global”) and at the same time shaping and shaped by the development of networked infrastructure systems. On a more generic level, they have emphasized the mutual reinforcement over time (since the early nineteenth century) between the development of networked infrastructures and the growing importance of networked forms of territoriality, i.e. forms of spatial organization increasingly resting on relations in space based on (distant) connections rather than, or in combination with, relations based on spatial proximity. They have criticized still influential discourses emphasizing (spatially) structuring effects of transport infrastructures, which assume that improved accessibility necessarily results in enhanced economic development, and discourses emphasizing despatialization effects of telecommunications networks.

LATTs researchers have also sought to account for the diverse forms of development, governance and management of infrastructure systems, showing that they result from national or local community-specific combinations of knowledge, history, institutions, and forms of economic development and sociopolitical organization. They have challenged “endogenous” models or understandings of the development of these infrastructure networks, which assumed the overarching influence of a drive for ever-increasing interconnection and the systematic prevalence of the “most efficient” technologies.

More specifically, LATTs researchers have contributed to studies of the networked city and networked urbanism; and to the understanding of the contemporary urban as having to do with the size, density and diversity of connections rather than solely with the size, density and diversity of population and activities



as the conventional wisdom held. This in turn has important implications on the conceptualization of urban powers, inequalities, and on the understanding of the urban condition more generally. LATTs researchers and doctoral students have contributed to the debate raised by the very influential *splintering urbanism* thesis (Graham and Marvin 2001), challenging its over-generalizing character, and discussing the methodological causes and the debatable normative implications of this over-generalization. They have explored the urban “beyond” the networked city. And they are actively exploring, more generally, the urban politics of the contemporary transformations of infrastructures, the rise (or rebirth) of small-scale networks or facilities, the resulting hybridization of incumbent sociotechnical systems, and the growing influence of forms of urbanization alternative to the modernist networked city.

URBAN RISKS AND INFRASTRUCTURES: A MULTI-SCALE, MULTI-RISK APPROACH

Risk and crisis studies have been developed within LATTs relatively early on, but they have gained momentum since the early 2010s with the start of several collective research projects and the hiring of several postdocs and doctoral students. Together, these projects aim to revisit urban and environmental issues through risks and vice versa. Studying the technical worlds generated by risks and crises and the tools and mechanisms implemented by relevant actors to measure risks and manage crises allow us to think about these questions in novel ways. ‘STS glasses’ allow to capture risks beyond the conventional categories applied to them (natural, technological, social, environmental), to take into account their diverse spatiotemporal dynamics, to explore the role played by dedicated sociotechnical devices in risk and crisis management, and finally to account for the involvement and influence of heterogeneous actors (public authorities, inhabitants, private actors, etc.) involved in *capturing* and *objectifying* risks (Daston and Galison 2007). It also allows to think about risks and crisis as *infrastructuring*, i.e. shaping materialities, technologies and societies.



The EURIDICE project (*Équipe de recherche sur les risques, dispositifs de gestion de crise et des événements majeurs*; or, Research group on risks, crisis management and major events), for example, developed in collaboration with the Paris police department (*préfecture de police*) aimed at the observation and analysis of the management of both planned events (COP21, the EU Sequana exercise, Euro 2016) and unplanned events (the Paris attacks of 13th November 2015, Seine flood damage, oil crisis). The research crucially depended on building a lasting relationship of trust with police authorities in order to be able to observe *in situ* and in real time the work involved in coordinating all stakeholders in crisis management situations. The observation of a crisis management exercise (EU Sequana) about the Seine's rising and receding floodwaters over two weeks, which brought together 87 private and public stakeholders, became the subject of a book (November & Creton-Cazanave, 2017). It shows the long process of producing a *common world*. The book's originality lies in the fact that each chapter was co-written with crisis management professionals who had taken part in the exercise.

More generally speaking, risk studies within LATTs can be grouped under three main themes:

- *Researching the spatial footprint of risks.* Although it may appear obvious that most risks have spatial effects and that they affect areas (in their political, economic as well as social dimensions), it is less often acknowledged that (urban) spaces also generate risks. And the performativity of risks, their capacity to transform spaces, is also often overlooked. These issues and their interrelations are explored under this theme.
- *Understanding risks as public problems.* Analysing the measures taken to assess, monitor or manage risks and crises reveals the details of the tensions and frictions that occur within and between the concerned

organisations and stakeholders. A research on the monitoring devices in safety and security systems in the railway sector showed that the main problem is not one of the (dangerous) accumulation of information but rather the processes of knowledge selection and data segregation effectuated by these systems. In other projects, crisis management exercises are analysed as a specific device of governmentality, and researchers examine the capacity of these exercises to transform over time the organisations or institutions that carry them out or stage them. Still other projects are focused on the governmental organisation of major crises and are analysing the French interministerial crisis unit.

- *Exploring and codeveloping risk and crisis management tools.* Some projects are focused more closely on the coordination tools set up in certain organisations in order to help elucidate the tensions/limitations/solutions these organizations try to resolve. For instance, LATTTS researchers collaborate with actors to establish dynamic mapping tools responding to the requirements of the various public and private partnerships.
- Within these different themes, some researchers are researching risk and crisis issues by studying the activity of professionals affected (architects, safety engineers, insurance companies experts, crisis management professionals...), while others focus on the perspectives of *citizens, users or residents*.

COMMUNITY LIFE

LATTTS has around 80 members, 30 of whom are permanent researchers. Community life here takes several forms: once a year, LATTTS organises a 1-2 day residential seminar (off-campus) aimed at both team building and group work on a common theme (cf. photo of a recent residential seminar in Buttes-Chaumont, Paris). The most recent theme addressed collectively concerned infrastructure and resulted in an edited book (Chatzis et al. 2017) covering sectors as diverse as bridges, airports, water and electricity grids, submarine communication cables or IT server farms. Authors navigate between 'smart' infrastructure systems and longer-established ones (those originating in the first and second industrial revolutions), and some chapters study what happens to traditional infrastructure in the digital age. This diversity allows the authors to explore in greater depth what different infrastructure systems have in common and to discuss the relevance of extending the notion of infrastructure to other fields (e.g., telemedicine, architectural projects or crisis management organizations). It also allows to highlight some more generic developments, particularly with regard to the assertion of individuals within modern infrastructural landscapes, and the intrinsically political dimension of infrastructure that usually tends to remain overshadowed, in the same way that infrastructures generally tend to be buried and kept out of sight.

A one-day conference was recently organized to celebrate LATTTS's 30th anniversary, based on a dialogue between former and current researchers of the centre. The conference was a great success with over one hundred participants. LATTTS PhD students and recently arrived researchers were able to present their ideas to the laboratory's founders and old members. Over time, empirical objects have shifted, research questions have evolved, and the relationships between technologies, territories and societies components are explored anew... but the original blend appears robust.

Finally, let us note that LATTTS members lecture in several Master programmes, mainly in urbanism, sociology, political science and geography. Among these courses, a typically STS-oriented masters course has been organised by LATTTS since 2013 for the ENPC engineering students; entitled *Mapping controversies in*

science and technology, it was developed in relation with the FORCCAST project launched by Bruno Latour a few years ago, which brings together teaching experience in controversies from around the world.

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ASSEMBLING ARTIFICIAL NATURES FOR NEW SOCIO-TECHNICAL WORLDS?

Jonathan Rutherford

THIS ARTICLE EXPLORES THE EMERGENCE OF ARTIFICIAL ENCLOSED ENVIRONMENTS IN CITIES AROUND THE WORLD WHICH SEEK TO CREATE PRECISE AND PRODUCTIVE MICROCLIMATIC CONDITIONS FOR LEISURE ACTIVITIES, FOOD PRODUCTION AND BOTANICAL DISPLAY. THROUGH A FOCUS ON THE SOCIO-TECHNICAL CONFIGURATION OF THESE SPACES IN TWO EXAMPLES, THEIR WIDER SIGNIFICANCE AND CONSEQUENCES ARE QUESTIONED IN A CONTEXT OF ECOLOGICAL TURBULENCE AND UNCERTAIN PLANETARY FUTURES.

Making snow on indoor ski slopes, growing cherry tomatoes in western Iceland, recreating tropical rainforests in central Paris... The capacity to create and control strategically useful and productive microclimatic conditions within indoor enclosed ecologies may well be a significant key shift in human – environment relations. As the planet's climate experts cast doubt yet again on our collective ability to urgently and appropriately respond to clear signals that global warming is happening and its deleterious effects are becoming ever more widespread¹, there seems to be a somewhat paradoxical focus on fashioning artificial environments for leisure, food production and botanical display that bear little or no resemblance to either the setting in which they are developed or the original milieu from which they take their inspiration. These 'arks' thus constitute a new, highly selective form of urban environment in which boundaries between inside and outside come to represent nothing less than priorities and choices about the types of species, spaces and activities of humanity worth saving and those which can be discarded in an already emerging, uncertain and turbulent future.

Tracing the processes and practices through which these emerging environments are constituted is thus at once crucial, fascinating and, as is habitual in STS, worthy of close attention for understanding how inherently socio-technical worlds come to be. In this short article, I explore two brief examples of emerging enclosed ecologies which are reliant on technology deployment to create, what are claimed as, efficient conditions for the activities they sustain.

CREATING NEW AND IMPROVED NATURE

With climate change creating uncertainty over future land availability and agricultural productivity, there are increasing attempts to transfer the rationales and practices of precision agriculture into urban areas in a variety of ways to provide control and greater efficiency of the growing environment. AeroFarms in Newark, New Jersey is, for example, using "a completely controlled environment... [to] take indoor vertical farming to a new level of precision and productivity with minimal environmental impact and virtually zero risk".² Taking over a former industrial building it has almost 70,000 square feet of space for growing salad greens and other plants on twelve stacked layers each eighty feet long.³ This is 'closed loop' aeroponic farming which provides plants with water, nutrients and oxygen by spraying a mist over their roots, thus using 70% less water than hydroponic farming (which itself uses 70% less water than normal farming), and substituting a patented and reusable artificial fabric cloth for soil: "If crops can be raised without soil and with a much reduced weight of water, you can move their beds

1 See IPCC (2018) Special Report: Global Warming of 1.5°C. <https://www.ipcc.ch/sr15/>

2 <http://aerofarms.com/>

3 "The willingness of a certain kind of customer to pay a lot for salad justifies the investment, and after the greens get the business up and running its technology will be adapted for other crops, eventually feeding the world or a major fraction of it. That is the vision", Frazier, I. (2017) "The vertical farm." *The New Yorker* (9 January 2017).

4 Op.cit.

5 Op.cit.

6 See <http://aerofarms.com/technology/>

7 Frazier, op.cit.

8 Vyawahare, M. (2016) "World's largest vertical farm grows without soil, sunlight or water in Newark." *The Guardian* (14 August 2016).

9 See <http://www.ikea.com/gb/en/products/indoor-gardening/>

more easily and stack them high".⁴ AeroFarms balances the place specificity of being based in Newark with a desire to replicate its model to fit other urban contexts using algorithms, sensing devices, CO2 enriching and bespoke LED lighting technology that totally controls the environment it is configuring: "The technology it uses derives partly from systems designed to grow crops on the moon. The interior space is its own sealed-off world; nothing inside the vertical-farm buildings is uncontrolled... In short, each plant grows at the pinnacle of a trembling heap of tightly focused and hypersensitive data".⁵ The advantages for AeroFarms are multiple: "We have optimized our patented aeroponic growing system for faster harvest cycles, predictable results, superior food safety and less environmental impact".⁶ Given the high-tech process, the result is indeed a product unlike anything in 'nature' whereby "plants create themselves partly out of thin air",⁷ and there is production of "more crops in less space while minimizing environmental damage, even if it means completely divorcing food production from the natural ecosystem". As AeroFarms chief marketing officer argues: "Out there, in nature, we don't have control over sunlight, rainfall, here, we are giving plants what they need to thrive".⁸

Figure 1: Precision indoor farming, Reykjavik, September 2017 (photo: Jonathan Rutherford)



Driven by the need to save land and resources and reduce pollution, such as from agricultural runoff, for future environmental planetary sustainability, but also feed a rapidly growing global urban population, many variants of this initiative - reducing the amounts needed of one or more of sun, soil and water - are seeing the light of day in cities around the world (see figure 1). And the logics, practices and techniques are becoming ever more diffuse and democratized beyond experiment and scientific expertise into the lay domestic realm. For example, having teamed up with the Swedish University of Agricultural Sciences, Ikea now sells a range of hydroponic indoor gardening technology kits complete with seeds, nutrients and LED lights. These kits are deliberately aimed at apartment dwelling citizens across the world who do not have direct access to outside gardens.⁹ Through these initiatives, large-scale farming previously done beyond the city is being brought or rescaled into urban areas and into the home, creating new 'insides' that aim to alleviate the problems of, and therefore improve on, increasingly turbulent unsustainable 'outsides'.

SNOW AS INFRASTRUCTURE: MAKING THE PERFECT PISTE EVERY DAY

Indoor ski centres are becoming ever more popular across the UK, Europe and North America as skiers of different ages and abilities seek exact, guaranteed, all year long and locationally convenient conditions in which to practice on the piste.

But the novelty and diffusion of these centres shrouds the sheer complexity of the infrastructure systems required to reproduce Alpine conditions in an urban indoors in Manchester or Hemel Hempstead. The snow has to be actually produced on a daily basis with precise physical qualities as well as in sufficient quantities, while there is a constant struggle to keep the ambient temperature at the right level (-2C during the day and -8C at night). The scale of the enterprise is astounding – this is a veritable industrial ecology of leisure with a series of inputs and circulations of material flows (water, ammonia, glycol, cooling, condensers and so on) to allow skiing to take place in a manufactured and controlled setting which transcends the climatic, seasonal and topographic limits of the immediate environment.

10 <https://www.chillfactor.com/10th-anniversary/>

11 <https://www.manchestereveningnews.co.uk/business/ever-wondered-how-snow-made-13021752>

12 <https://www.telegraph.co.uk/travel/ski/news/uk-longest-indoor-ski-slope-chill-factor-closes-due-to-poor-snow/>



Much of the preparation and maintenance of the whole system is done at night, and involves a surprisingly substantial amount of actual human labour. It takes 8 people to move equipment and décor to get the machines and ploughs in. “Every night, our snow machines pump out 10 tonnes of snow to keep it fresh”.¹⁰ But the slope then has to be ‘groomed’ and the computer monitored control of the snow on the slope is backed up by somebody double checking every square meter for depth and quality. Then the snow has to rest to harden up for 7 hours before ‘use’. As the facilities manager for the Manchester centre summarises: “My primary objective is to maintain the snow conditions. It’s a very fine balancing act, but we maintain a level of 400mm of snow, and a lot of work goes into that”.¹¹ The complex maintenance procedure was foregrounded when the facility was forced to close temporarily in February 2017 due to poor snow conditions.¹²

These centres resemble ‘boxes’ as their protected, controlled settings become crucial to create the precise conditions for snow making: an insulated structure,

Figure 2: Indoor ski centre with artificial snow, Manchester, March 2018 (photo: Jonathan Rutherford)

13 "Just like on the mountains, indoor snow is made using a cold environment, water and air... In the mountains, crystals are found in the clouds before they turn to snowflakes, these pure crystals are also what falls on The Snow Centre's Slopes at night": <https://www.thesnowcentre.com/snowsures/news/how-snow-is-made-indoors>

14 See <https://www.economist.com/news/business/21716659-some-italian-ski-resorts-now-get-complete-coverage-snow-guns-snow-making-companies>

15 See Marvin, S. & Rutherford, J., 2018, 'Controlled environments: an urban research agenda on microclimatic enclosure', *Urban Studies* 55(6), 1143-1162.

air conditioning to circulate cold air, chilled water supply, a slope with a glycol antifreeze cooling system underlay, liquid ammonia storage tank. The process resembles the natural process of snowfall ('clouds', 'tiny particles', 'snow crystal formation')¹³ but filters out extraneous elements and the unreliability of not knowing when it is going to snow. There are considerable environmental externalities to these centres which consume huge amounts of energy and other resources on a daily basis, often requiring their own electricity substations and water provision. This is a new form of closed loop industrial ecology bringing into being a synthetic leisure space which resembles the conventional outdoor activity but actually constitutes something else and new, as demonstrated by the increasing number of people who now regularly ski indoors without ever skiing outdoors. The remarkable thing about this process is that there are now a number of ski resorts in the Alps and elsewhere actually using similar systems to produce artificial snow for their slopes when there is a natural shortfall.¹⁴ The recreation of outdoors indoors is now being taken back outdoors, the simulacrum is reality.

URBAN ANTHROPOGENIC FUTURES?

These two brief examples demonstrate a close focus on what can be called the infrastructuralisation of new enclosed ecologies. A set of intertwined socio-technical processes underpin enclosed spaces by introducing and reinforcing logics of efficiency, calculability, predictability and control through technology. What an urban STS perspective foregrounds is how this infrastructuralisation is materially (concretely and politically) done in and across a wide range of cities to allow the work of enclosure to take place for particular productive purposes, while excluding that which is not required or is less desirable. It thus begins to uncover some of the contradictions and consequences of this development, which will demand further critical interrogation.

If this appears to be something out of space age experimentation or science fiction, then that's because it is. The knowledge, techniques and practices of enclosure, experiment, manipulation and improvement behind these new ecologies have circulated and transmuted into the urban arena from other domains including biospheric engineering, the technoscience of space exploration and precision agriculture. In critically exploring both the hybridization of insides and outsides and technology and ecology, and the crossovers between distinct domains of expertise, knowledge production and life support, developing an understanding of these controlled environments is crucial for navigating and forging possible urban and human futures in the anthropocene.¹⁵ This area of research pushes at and looks beyond the traditional boundaries and settings of the city in order to develop new ways of understanding human-technology relations on a turbulent planet.



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CONTROVERSIES OR PUBLIC PROBLEMS? OPEN QUESTIONS AND RESEARCH PROPOSALS

Stève Bernardin

PUBLIC PROBLEMS AND CONTROVERSIES USUALLY REFER TO TWO TRADITIONS OF SOCIAL SCIENCES. THE FIRST ONE FOCUSES ON PROCESSES THROUGH WHICH PRIVATE ISSUES TRANSFORM INTO COLLECTIVE CONCERNS AND RAISE INTEREST AMONG POLITICIANS. ITS MOST CLASSICAL CASE STUDIES INCLUDE CIVIL RIGHTS OR ENVIRONMENTAL ISSUES. THE SECOND TRADITION REFERS TO CONFLICTS RELATED TO SCIENCE AND TECHNOLOGY IN SOCIETY. IT UNDERLINES THE ROLE OF SCIENTIFIC REASONING ON HIGHLY DEBATED TOPICS SUCH AS NUCLEAR WASTE OR BIG DATA. I ARGUE THAT THE TWO RESEARCH PERSPECTIVES, AS DIFFERENT AS THEY ARE, COULD GAIN IN ANALYTICAL DEPTH AND PRECISION FROM ONE ANOTHER. MY PAPER IS AN ATTEMPT TO ILLUSTRATE THIS THROUGH SOME RESEARCH PROJECTS DEVELOPED OVER THE PAST TEN YEARS ON TRAFFIC SAFETY AND SMART CITIES IN FRANCE AND THE UNITED STATES.

CONTROVERSIES OR PUBLIC PROBLEMS? OPEN QUESTIONS AND RESEARCH PROPOSALS

Public problems and controversies usually refer to two traditions of social sciences. The first one focuses on processes through which private issues transform into collective concerns and raise interest among politicians. Its most classical case studies include civil rights or environmental issues. The second tradition refers to conflicts related to science and technology in society. It underlines the role of scientific reasoning on highly debated topics such as nuclear waste or big data. I argue that the two research perspectives, as different as they are, could gain in analytical depth and precision from one another. My paper is an attempt to illustrate this through some research projects developed over the past ten years on traffic safety and smart cities in France and the United States.

FROM CONTROVERSY TO PUBLIC PROBLEM: A STRUGGLE FOR POLITICAL ORDER

What is wrong with traffic safety statistics? The question seems legitimate for anyone who reads for the first time the statistical form used by state officials to report accidents in France. Indeed, every possible characteristic of the crash appears recordable and accessible in a standardized format, from age and sex of the driver to profession and blood alcohol concentration, date, time and place of the accident, light conditions, road design or vehicle type. Physicians, however, expressed criticism in the early years of the new millennium. More precisely, they opposed engineers in a growing dispute on data collection. Borrowing from Dorothy Nelkin (1979), I studied this controversy as a lens to reveal some hidden assumptions of scientists in the field of traffic safety. I realized that physicians asked for data on injuries, as they wanted to prevent first and foremost the most severe crashes, rather than accidents in general. State engineers, in turn, focused on roadway design to cope with what they perceived as the core structure of the problem. That was how the two groups expressed and reaffirmed some core values of their professional communities.

IDENTIFIANT															BULLETIN D'ANALYSE D'ACCIDENT CORPOREL DE LA CIRCULATION														
CODE UNITE					NUMERO DE PV					ETABLI PAR					1 - Direction Nationale					2 - Préfecture de police de Paris									
3 - CARACTERISTIQUES					INTERSECTION					CONDITION ATMOSPHERIQUE					TYPE DE COLLISION														
LUMIERE					LOCALISATION					Plus légère - 2					Accident impliquant - 1														
DATE					CODE INSEE LIEU ACCIDENT					Plus forte - 3					Plus forte - 3														
HEURE					Département					Normal - 1					Plus forte - 3														
JOUR					Commune					Plus forte - 3					Plus forte - 3														
2 - LIEUX					REGIME DE CIRCULATION					TRACE EN PLAN					ETAT SURFACE														
CATEGORIE					ROUTE					(sens du 1er véhicule décent.)					1 - Normale														
1 - Autoroute					A sens unique - 1					Partie rectiligne - 1					2 - Moutonnée														
2 - Route nationale					Bidirectionnelle - 2					En courbe à gauche - 3					3 - Vergée														
3 - Route départementale					A chaussées séparées - 3					En courbe à droite - 3					4 - Vague														
4 - Voie communale					Avec voies d'afouage variable - 4					En S - 4					5 - Enneigée														
5 - Hors réseau public					Lettre indic A					POINT KILOMETRIQUE					6 - Boue														
6 - Parc de stationnement ouvert à la circulation publique					Ter - 3					se repère par rapport à la borne amont					7 - Vergée														
9 - Autre					etc.					N° de borne					8 - Corps gras - Huile														
3 - VEHICULES					CATEGORIE ADMINISTRATIVE					OBSACLE MOBI F HIRTE					MANOEUVRE PRINCIPALE AVANT L'ACCIDENT														
01 - P.L. seul (PTA>7,5T)					14 - P.L. seul (PTA>7,5T)					01 - Véhicule au stationnement					01 - Sans réajustement de direction														
02 - Cycle + 30 - scooter<50 cm3					15 - P.L. + remorque					02 - Autre					02 - Même sens, même file														
03 - Véhicule, bicycle					16 - Tracteur routier seul					03 - Glacière métallique					03 - Entre 2 files														
31 - Moto<50<125 cm3					17 - Tracteur routier + semi remorque					04 - Glacière béton					04 - En marche arrière														
32 - Scooter +50<125 cm3					37 - Autobus					05 - Autre gésierie					05 - A cotressans														
33 - Moto +125 cm3					38 - Autocar					06 - Bâtiement sur pile de pont					06 - En franchissant le terre-plein central														
34 - Scooter +125 cm3					39 - Quad<50cm3					07 - Support signalisation verticale					07 - Dans le couloir de bus - dans le même sens														
07 - V.L. seul					40 - Tramway					08 - Poste d'appel urgence					08 - Dans le couloir de bus - dans le sens inverse														
10 - V.L. seul (1,5T +PTA<3,5T)					20 - Engin spécial					09 - Moutier urbain					09 - Traversant la chaussée														
13 - P.L. seul (3,5T +PTA<7,5T)					21 - Tracteur agricole					10 - Papeet					10 - Manoeuvre de stationnement														
99 - Autre					99 - Autre					11 - 101, refuge, borne haute					11 - A gauche														
LETTRE CONVENTIONNELLE					IMMATRICULATION					ASSURANCE					TOURNANT														
1 - Véhicule en fuite					Département					1 - Oui					15 - A gauche														
2 - Véhicule en fuite					Mois					2 - Non					16 - A droite														
1 - P.K. ou P.R. croissant					Année					3 - Non présentation					17 - A gauche														
2 - P.K. ou P.R. décroissant					27 29 43 44					4 - Autre					18 - A droite														
4 - USAGERS					CATEGORIE					ALCOOLISME					TRAJET														
1 - Conducteur					1 - Conducteur professionnel					Imposable - 1					1 - Travail														
2 - Passager					2 - Agriculteur					Refusé - 2					2 - Domicile - école														
3 - Piéton					3 - Artisan, commerçant, profession indépendante					1 - Valide					3 - Courses - achats														
4 - Piéton en roller ou en trottinette					4 - Cadre supérieur, professeur					Prise de sang - 3					4 - Utilisation prof.														
1 - Responsable présumé					5 - Libéraux, chef d'entreprise					Éthyloalco - 4					5 - Promenade - loisir														
					6 - Cadre moyen, employé					Résultat non connu - 5					6 - Autre														
					8 - Ouvrier					Dépassement négatif - 6																			
					1 - Masculin					8 - Défaut de permis																			
					2 - Féminin					9 - Consulté accompagnée																			
					RESIDENCE DEPARTEMENT					FACTEUR LIEU L'USAGER																			
					OU PAYS					1 - Malaise - fatigue																			
					NAISSANCE					2 - Médicament - drogue																			
					Mois Année					3 - Infirmité																			
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										74 - Consulté accompagné																			

Figure 1: "Traffic Accident Statistical Form (Observatoire National Interministériel de la Sécurité Routière (2015) *La sécurité routière en France*. Bilan de l'accidentalité de l'année 2014. Paris: La Documentation française, p. 118)."

The study went on with a sociological analysis of the media, to understand how journalists selected their sources to write about the debate. It helped to go beyond some naive appreciations of science and its diffusion, to emphasize precisely some specific norms and practices related to science communication (Lewenstein, 1992). More specifically, the study showed that journalists were active players in the controversy, not only as obligatory passage points for the debate, but also as tacit promoters of another viewpoint on the issue, different from that of physicians and engineers. Indeed, they draw on their day-to-day experience with the news to underline a matter of drivers' behaviors and discipline. The words used in the press articles, as a consequence, reflected a problem of individuals, rather than of roads or vehicles, with people actually not injured or dead, but deliberately "maimed" and "killed." Such a disciplinary stance relied on the testimony of police officers presented as the experts on the issue. This analysis helped to reveal another professional community involved in the debate, besides those of engineers and physicians, with spokespersons from state police asking for data on cell phone use or drug abuse, for instance. This contributed to set the stage for a typical study of a scientific controversy, with competing groups and professional values made visible through a public dispute.

The analysis gained depth when confronted with some classic works in sociology of public problems. In that scientific domain, traffic safety is not a minor topic of interest. It often stands as a major theme of investigation after the publication of Joseph Gusfield's *Culture of Public Problems* (1981). In his book, the sociologist investigated how a private practice, that of drinking before driving, became a public problem in the United States. His research proved seminal in many ways, as he proposed to consider as "public" an issue not only made "visible" or transformed as a matter of "collective" concern, but also developed as an "institutional" theme of interest. The approach led him to highlight the processes through which political responsibility was distributed for the cause and the treatment of problems. Indeed, even if actors may not be aware of their own conceptual biases as regard to the definition of accident, toward a question of vehicles, of roads or individuals,

they all enter into a competition for some scarce public resources, to see their priorities become political (Neveu, 2015). Through that process, a plurality of possible realities tends to disappear, as only one definition of the legitimate question and its realistic answer remains in the end (Best, 1995 [1989]). To Gusfield, as a result, public problems are powerful sources of legitimization or de-legitimization of the existing political order.

This brings new light on the study of controversies related to science and technology in society. In the case of traffic safety, it helps to uncover some political programs beyond competing claims for objectivity. Physicians, for instance, had been advocating for years, long before I started fieldwork, for a reallocation of public funding to injury control, through meetings and talks in academic arenas and professional societies. Their proposal, however, faced opposition from state engineers, as they struggled to save resources for road maintenance at a time when public budgets began to shrink. They also confronted indifference, not to say resistance, from journalists intimately convinced that safety was a matter of individual discipline, to be dealt with police officers rather than physicians. The controversy on accident statistics, then, became a struggle for political visibility, to end up either with the recognition of the existing order, or with a profound reordering of traffic safety policies. Some similar processes seem to prevail in other domains of interest for science and technology scholars. As regard to nanotechnologies, for instance, Brice Laurent argues that political order is necessarily at stake, when scientific objects become a problem to be debated beyond laboratories and universities (2017). It is a sign, to me, that scholars interested in science and technology in society could find great interest in developing an in-depth dialogue with sociologists working on public problems.

FROM PUBLIC PROBLEM TO CONTROVERSY: THE SOCIAL PRODUCTION OF CREDIBILITY

Sociologists interested in public problems, in turn, might also want to build bridges with science and technology scholars. To make it clear, I will use a case study related to so-called smart cities, on which I have had the opportunity to work on at the Ecole Nationale des Ponts et Chaussées and the Université Paris-Est Marne-la-Vallée, together with sociologists and historians of the Laboratoire Techniques, Territoires et Sociétés (LATTS, UMR 8134). "Smart cities" usually refer to the development of connected cities, where the dissemination of numerical technologies brings a series of new public and private services to enhance the citizens' experience of urban life. Their promoters often present them as the solution to a wide variety of problems in the United States. The spread of numerical technologies, to them, would help to treat environmental issues, for instance, through real-time energy management. It could also bring security to the most insecure places, with police officers likely to access new sensors and monitoring devices. These arguments tend to draw political attention on smart cities as the solution to some highly debated issues, which, to me, make them an interesting case study for the analysis of public problems.

Who are the promoters of the smart city, and how do they manage to make it a solution to public problems? Scientists and engineers may have their word to say in the process, as science and technology seem at heart of the topic. Indeed, they could provide academic authority and legitimacy to the development of smart cities, most notably through scientific writing, to depersonalize claims and universalize projects that would otherwise be difficult to disseminate (Henry, 2017). It would seem easy to them, for instance, to play on the apparent complexity of sensors or data mining, deliberately or not, to create a hyper-technical and obscure discourse on the topic. That would be a perfect way to raise the entry cost for new comers in the debate, and make sure no strong criticism from non-scientists could develop easily, as show in other cases (Comby, 2015). I could not find any such practices, however, as regard to smart cities, which led me to search for alternative options to study scientific involvement in the field.

Figure 2: "Parking in DC (Photograph by the author, 28 July 2018)."



Back to the academic literature on controversies, I realized that scientific authority was not even central, most often, in the processes through which scientists get approval or credit from non-scientists. Scholars interested in science and technology rather emphasize a need for the engineers, for instance, to translate their claims, to rephrase and to problematize them to make them appealing outside of laboratories and universities. Scientific demonstrations, in that sense, become political, as they develop to convince a public and to attract allies for the scientists (Barry, 1999). Even in the Silicon Valley, where science and technology may seem most legitimate and unquestionable, researchers and engineers engage very frequently into public "demos" of their work and projects, not only to secure funding or get recognition, but also to coordinate and create routines to interact with non-scientists (Rosental, 2002). Scientists do not always encourage these practices. They can even resist them, depending on their academic positions and social trajectories. Most often, however, they end up adapting to the targeted public and modifying some pieces of their initial research project. Such a result is a reminder that, in many cases, scientists and non-scientists have to "co-produce" science and technology to gain technical credibility and social legitimacy (Jasanoff, 2004).

This is an interesting point to keep in mind, while investigating the interactions between scientists and city officials working on smart cities in the United States.

Through interviews and field observations, indeed, I could realize that information specialists tried first, a few years ago, to impose their projects to municipal bureaucrats. As they faced resistance, however, they decided then to adapt to some of the needs of their counterparts within city councils. It led them to define a new discourse and to develop new practices on smart cities, as the solution to some specific public problems (Bernardin, 2018). The analysis echoes that of scholars interested in a broader history of urban technologies and their relation to municipal governments. To me, it comes as a confirmation that sociologists working on public problems could learn a lot from science and technology studies, to better understand the processes through which experts can gain or lose social legitimacy over time.

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CHERISH, NOT PERISH

Striving for Harmony in Diversity: EASTS and the Networking Infrastructure of Global STS

Wen-Hua Kuo

STS has a relatively short history in East Asia—it was not until the 2000s that societies and programs that bore the initials "STS" in their titles were established in China, Japan, Korea, and Taiwan. Yet in just fifteen years or so East Asia has come to play an active role in the academic world and in the transformation of a flourishing East Asia via journals such as EASTS.

Historically, it should be noted that as an intellectual trend STS was introduced to this region far before its institutionalization. Compared to the intellectual orientation of its Western counterpart, STS in East Asia is more locally rooted and problem-based. While in Japan STS was impregnated with socialist criticisms of Cold War science and it directs increasing attention to alternative forms of social organization grounded in ideological pluralism, STS in China has inherited ideology driven, politico-intellectual traditions of “natural dialectics” (*Zi Ran Bian Zheng Fa*) and is backed up by state ideology. While the assessment of science and technology is a predominant component of China’s STS, Japanese STS scholars tend to oppose the government by promoting science for the citizen.

STS in Taiwan and Korea takes yet a different disciplinary orientation: both influenced by Joseph Needham’s account of science and technology in Asian civilizations (such as those in *Science and Civilisation in China* by Needham and his collaborators), in particular before the Western scientific revolution, and both developing their research agendas from the discipline of the history and philosophy of science, Taiwan and Korea have structured their criticism of scientific development as a necessary step toward democratization. The introduction of mainstream STS theories such as the Sociology of Scientific Knowledge, Actor-Network Theory, Social Worlds Theory, and the Anthropology of Science and Technology did not erase these traditions; instead, introduced by East Asian scholars returning from Europe and the US, such theories have blended into existing traditions, stimulating the growth of new STS communities in East Asia.



Fig. 1 Assemblage of covers from EASTS

EASTS' inception can be understood in this light. Founded in 2007, EASTS started out as an intellectual network of scholars in the history and philosophy of science, mainly from Taiwan, Japan, Korea, and what we used to call "outside of East Asia" branch, or "OEA" for short. With the support of Taiwan's Ministry of Science and Technology, EASTS aimed to be the first English-language journal dedicated to East Asian STS. The founding editorial board included Daiwie Fu as editor-in-chief, Chia-Ling Wu, Togo Tsukahara, Sungook Hong, and Warwick Anderson as associate editors, and more than forty editorial board members from communities covering not only traditional East Asia but also Australia and Southeast Asia, and covering various disciplines from the history and philosophy of science and history of medicine to public understanding of science and science policy. The journal itself came into being as the realization of this collective voice that was seeking the meaning of doing STS in and on East Asia.

As a quarterly, EASTS, like other academic journals, publishes research articles, research notes, review essays, commentaries, and forums. Even so, in order to make itself distinct, a large amount of editorial effort has been put into book reviews and the covers, which are perhaps marginal for an academic journal (see the assemblage of some covers in Figure 1). Since our inception, covers have been a colorful and artistic feature of EASTS. For each issue, editors carefully choose material that will be intellectually compelling for readers and transform it into a piece of visual art that faithfully conveys its nuances. With a team that consists of more than ten editors covering major Asian languages (Chinese, Japanese, Korean) as well as French and German, in our Book Review section EASTS aims to be the gateway to East Asian STS, with reviews of books published in Asian languages as well as in English.

For those who want to understand the intellectual characteristics of EASTS in balancing the different origins of and ideas on STS, the quickest way is to read Daiwie Fu's positioning paper "How Far Can East Asian STS go?" published in its first issue (1.1. It can be read or downloaded at <https://read.dukeupress.edu/easts/article/1/1/1/25936/How-Far-Can-East-Asian-STS-Go-A-position-paper?searchresult=1>). By proposing EASTS to be a venue for "a distinctive EASTS study", Fu called for a reassessment of existing interpretive frames (such as "center-periphery" models or post-colonial connections) and claimed an intellectual network that is made to set new parameters for studying East Asian STS. He also called for research agendas, such as focusing on socially embedded, situated technologies, in order to substantiate interdisciplinary and cross-cultural practices of STS. As Fu enthusiastically concludes, "East Asian STS will offer fresh STS perspectives because of its special local experiences, shared cultural and colonial histories, similar geological and meteorological makeup, and similar global positions... No doubt, East Asia has a lot to offer STS communities worldwide".

During his six years of editorship (2007-2012) Fu's efforts can be appreciated in thematic issues on gender and technology (such as 2.2) and traditional technology and knowledge (such as 4.2 and 5.2), as well as in forums on the 50th anniversary of Thomas Kuhn's *The Structure of Scientific Revolution* (6.4), "Engaging Asia: A Forum on the History of Science and Technology" (6.2), and a panel discussion on the 2011 tsunami and subsequent Fukushima crisis in Japan (5.3). Further, EASTS has been open for different perspectives, and ways envisioning how EASTS could achieve a scholarship that engages not only people living in and working on this region but the global STS community. The issue "What Is Distinctive East Asian STS: Method, Assemblages, or Theories?" (6.4) was fully dedicated to reflecting on these perspectives.

It might be helpful to briefly review these visions. First is the relationship between science and the state. While EASTS is concerned with science policy, in particular deliberative democracy in science and technology, a more engaged



Fig. 2 EASTS editorial meeting at the 4S, Sydney, August 30, 2018

scholarship is needed on national policy toward science and technology in terms of R&D. For this, EASTS has achieved discussions in both a national and international context, such as China's biopolitics (5.3.), Singapore's Biopolis (7.1), and a comparison between Japan and New Zealand (5.4). Second, as the only journal in English on this area, EASTS has been expected to establish a scholarship that moves beyond "area studies" of STS. In addition to theoretical reflections, in its first decade the papers published in EASTS have brought up situations that challenge the meaning of East Asia and reframe the STS specificity. Reflecting the multiple origins of STS in East Asia, its papers belong to various disciplines, such as the history of science, sociology, technology studies, and anthropology. Nonetheless, together they exemplify efforts to expand the networks of STS beyond mainstream narratives in the Anglo-American context. A case for this can be seen in the issues on traditional medicines in East Asia (notably 2.4, 7.3, and 8.1). The theme is distinctively East Asian, yet capturing how these therapies travel around the world and changing ways of thinking about these living traditions is definitely a global question.

Chia-Ling Wu, editor-in-chief from 2013 to 2015, inherited the spirit of making EASTS an intellectual platform that thrives on harmony in diversity, yet without becoming some kind of STS "fox"—to use EASTS current associate editor Fa-ti Fan's term—roaming through disciplinary, geographical, and intellectual territories (in his response to Fu's position paper mentioned previously). While focused on East (and Southeast) Asia, EASTS is gradually expanding its geographical reach, publishing articles on South Asia (such as the issue on Indonesian STS, 11.1). We are also actively searching for articles in various disciplines to best present East Asia as both an intellectual subject and a meaningful method for doing global STS.

Though EASTS is still a young journal, we as editors are delighted that it has already become a permanent fixture in the networking infrastructure of global STS. A collaborative undertaking with the internationally renowned publishers Springer (from 2007 to 2011) and Duke University Press (from 2012), EASTS,

like the landscape of East Asia, is always in transition. When the late Society for the Social Studies of Science (4S) president Susan Leigh Star made mention of EASTS in 2007, it was as one of those initiatives not based in the traditional STS regions of America and Europe. With 4S inviting more non-Western involvement, and with EASTS advisory editors Kim Fortun and Ulrike Felt elected presidents of 4S and of EASST respectively in 2017, this seems to be the right time to renew EASTS' road map. While looking back at the multiple histories of STS in East Asia, it must reinvent itself by introducing research agendas that push EASTS beyond existing framings, such as simplified dichotomies of West and East as "center-periphery" or "theory-subject". We believe that this is why EASTS won the 4S Infrastructure Award in 2018, and we are grateful that our work with the journal has been recognized this way.

Ours is a fast-changing technoscientific world, and one in which East Asia isn't an outsider but has a permanent seat at the table. EASTS doesn't aim to provide the ultimate answers to all of STS's questions; but we do believe that these answers—if they exist—can only be approached and set down on paper by making use of the expanding networks and evolving infrastructures of an STS community that can shape social agendas and create responsive scholarship. To borrow Confucius' words, we strive for harmony in diversity.

Though we are indexed by Web of Science (SSCI and A&HCI) since 2016, EASTS equally treasures networks created via scholarly collaboration. We believe that any scholarly piece published in EASTS does not stand alone and will not fade away. So we invite you to join us in contributing your own work to the living archive that is EASTS!

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EASST ACTIVITIES

FACING THE ELEPHANT: STS INSPIRED REFLECTIONS ON THE POLITICAL CRISIS ASSOCIATED WITH MIGRANTS

Nina Amelung, Cristiano Gianolla, Joana Sousa Ribeiro, Sílvia Leiria Viegas, Bruno Magalhaes

IN SEPTEMBER 2018 THE CENTRE FOR SOCIAL STUDIES (CES), UNIVERSITY OF COIMBRA, PORTUGAL HELD A WORKSHOP ENTITLED 'HOW CAN STS HELP TO REFLECT ON THE POLITICAL CRISIS ASSOCIATED WITH MIGRANTS, REFUGEES AND ASYLUM SEEKERS?' AN INTERNATIONAL GROUP OF SCHOLARS FROM STS, MIGRATION AND BORDER STUDIES MET TO EXPLORE THE BENEFITS AND LIMITATIONS OF USING THE ANALYTICAL AND METHODOLOGICAL REPERTOIRE OF STS TO UNDERSTAND THE ONGOING POLITICAL AND SOCIAL MIGRATION CRISES. HERE, THE ORGANIZERS AND PARTICIPANTS WRITE TOGETHER AND ARGUE THAT IT IS NECESSARY TO TAP INTO THE FULL POTENTIAL OF STS AS SCIENCE AND INTERVENTION TO CONTRIBUTE TO ENGAGING WITH THE SOCIOTECHNICAL AND EPISTEMIC ASPECTS OF FORCED MIGRATION AND DISPLACEMENT, RESETTLEMENT, (RE)INTEGRATION, INCLUSION AND RELATED DEBATES AND PRACTICES.

Since at least 2015 and the so-called 'summer of migration', the term 'crisis' in combination with 'migration' has been the political and social hot potato. It has received a lot of scholarly interest from different areas of the social sciences, but surprisingly little from STS. In 2018 workshop organizers and participants of a workshop on 'How can STS help to reflect on the political crisis associated with migrants, refugees and asylum seekers' faced the elephant in the STS room and discovered that all the ingredients are in place to do interesting and scholarly and politically relevant research inspired by STS accounts.

Figure 1: Group Picture



The workshop was motivated by a desire to gather together scholars interested in exchanging and articulating suitable research questions and conceptual/methodological STS approaches in order to generate new insights. Considering the multi/interdisciplinary research on the topic already available – most prominently in migration studies or border studies – a driving question was what interesting partnerships could be made between STS and other research traditions, such as urban studies and postcolonial and decolonial studies.

Beginning by highlighting some of the most obvious connections, migration management establishes technologies and infrastructures that invite critical study through an STS lenses. As a substantial example of what infrastructures, and what implicit politics entangled with them, are at stake here, *Martina Tazzioli* reflected in her key note talk on the data infrastructures and data circuits associated with the implementation of debit cards in refugee camps, and explored the ways in which refugees' subjectivities have been shaped by this peculiar articulation between financial tools and 'humanitarian' rationales. Dealing with the processes of the financialization of refugee governmentality, Tazzioli focused on the Greek context, where the European Union (EU) has implemented the first refugee Cash Assistance Programme in Europe in collaboration with the United Nations High Commissioner for Refugees (UNHCR). She explored how financial tools, together with digital technologies, have been used to control and govern would-be refugees. In a significant concluding interpretation she questioned the nexus between identity and data that humanitarian actors try to establish through the spreading notion of 'digital identity', presented as something that both protects and controls refugees at the same time.

Figure 2: Martina Tazzioli



Two rather broad technological categories – Biometric Identification Technologies and Information and Communication Technologies (ICTs) – appear particularly relevant in (dis)enablement of migrants to exercise their right to move. Technologies are key instruments allowing simultaneously for political, social and cultural change, as well as new forms of social control. *Martin Lemberg-Pedersen and Eman Haioty's* contribution explored the element of social control being exercised with the help of biometric technologies. Based on their case study into the UNHCR's practice of iris-enrolling refugees, they discussed the 'humanitarian experimentation' of technologies on refugee populations. The authors explored some of the consequences of iris-data transformative capacity – such as becoming a suspicious (and a surveillable) body in a digital age and biometrics' dynamics of racialization – through the concept of the quasi-object (Serres, Latour). Furthermore, the authors argued that biometric technology acts as a tool for neoliberalized displacement governance, by considering refugees as traceable units of credit (of potential labor, consumption, aid delivery) and credit-nodes for an Information Technology (IT) market (security, consultancy and humanitarian actors).

The ambiguities linked to ICTs were addressed in several presentations. *Luciana Sotero, Maria Dias and Joana Sousa Ribeiro* prompted us to ask whether we were not jumping too fast to the conclusion that ICTs are necessarily beneficial to migrants' integration. They argued that ICTs might help migrants deal with the negative experiences associated with the breakdown of, what are known in psychology as, personal social networks. However, they also pointed out, ICTs are far from being a panacea: among other issues, they suggested that the fact that migrants now find it relatively easy to stay in touch with their families thanks to ICTs also has the effect of making the creation of new social connections less urgent, raising questions about ICT's complex relation to social (re)settlement and forced assimilation. Going further, the authors also made a second and, perhaps, more provocative question when they encouraged us to reflect on what meaning of 'integration' is being embedded in the ICTs being promoted as part of the EU's digital inclusion strategy. STS can help by offering concepts and paradigmatic cases on how to unpack normative assumptions built into these EU-funded ICT's.

In another case study on the role of ICTs, *Vasilis Galis and Vasiliki Makrygianni* addressed what they call 'the digital resistance in the Greek territory' and portrayed the strategies and practices of survival, resistance and counter-movement promoted by migrants living in a state of 'subversive mobility' (Cohen et. al. 2017). The speakers argued that the use of ICTs paves the path for collective 'unbordering practices' as it creates digital spaces of autonomy and empowerment. 'Escaping from domination' practices occur both when migrants communicate among themselves and with people in solidarity. Furthermore, the use of such digital technologies subverts the European hegemonic system, as it [co-]reconfigures migration practices by enacting emancipatory patterns of use, and *vice versa*. Against this backdrop, the authors analyzed the multidimensional role of ICTs in migratory routes and digital border technologies as persecutory instruments of the border regime.

The two examples on the complex roles of ICTs in the context of migration and border regimes clearly demonstrated the multiple human–non-human relationships at work, and focused on making visible the empowering and disempowering effects of ICTs on migrants.

Like the examples above, other contributions to the workshop also differed with regards to their implicit preferences enacting different versions of the 'the state', 'state borders' and 'migrants'.. Their different approaches reflected the various positions in an ongoing discussion in migration studies on so-called 'methodological nationalism' (Wimmer and Glick Schiller 2003). Migration research continues to produce a lot of – sometimes critical – work on how migration is governed by states and their technologies, but little work exists on how migrants exert their autonomy as moving subjects and how they claim rights without necessarily

depending on representational politics and practices. Critics have problematized the dominance of approaches that take the nation state and nation state borders for granted and thereby contribute to their further naturalization. Taking heed of this criticism, scholars have been putting together a new vocabulary to study migration 'from below'. The concepts of 'autonomy' (Papadopoulous and Tsianos 2013) and 'acts of citizenship' (Isin and Saward 2010) are important ones coined in this spirit. The discussion on methodological nationalism can be understood as an invitation to reflect on each scholar's account of migration with an eye to what such a perspective allowed them to see, but also what did it not allow them to see, where such blind spots derive from and, finally, how to overcome these limits.

Yet, taking into account that STS-inspired approaches also produce their own blind spots, overlook some developments and overemphasize others – which likewise should be subject of reflection – such approaches may help to expand and diversify the methodological and analytical repertoire (including that of methodological nationalism) available to study the blind spots of forced migration regimes and border technologies. As an example, we portray here the work of Fredy Mora-Gómez, which opened a rather promising line of inquiry on the intersection between studies on solidarity and STS work around the notion of care in practice (even though he did not himself use the word 'care' in portraying his research). Mora-Gómez's research introduces the notion of infrastructures of solidarity to the study of the everyday struggles of migrants and the role of actor-networks of care. His interest lies in particularly in the material textures and the work that goes into repurposing a rather symbolic piece of material, the life vest. His study looks at the voluntary action of a migrant, Ivan, who repurposes life jackets that are distributed to migrants crossing the Mediterranean. Repurposing vests is represented by the author as transgressive work that allows Ivan to reclaim agency and, while working in the 'oficina', to establish 'social networks'. STS helps Mora-Gómez's to study the voices usually neglected due to methodological nationalism. Learning to sew – as Ivan did to repurpose the life jackets – is connected to specific abilities of doing and particular networks of care, and these might help those interested in migrant solidarity understand how migrants reconstruct affective relations. Rather than treating the issue as a purely conceptual puzzle to be dealt with by the theoretician, Mora-Gómez encourages us to learn about the different meanings and modes of solidarity from migrants themselves. He does so in line with STS's calls for generalizing symmetry so as to extend agency to objects and other textures of matter.

Inspired by the workshop contributions, we conclude that STS may contribute in interesting ways to the study of migration and the many related political and social crises discursively associated with it, by:

- Addressing research problems that benefit most from unpacking and problematizing the naturalization processes entangled with migration regimes through classification and infra-structuring processes and 'de-scribing' the norms they embed, the ways they 'configure' for instance migrants and border practitioners, and the relations of authority they sustain.
- Diversifying the viewpoints of research subjects and including those voices usually silenced and marginalized by the socio-technical and epistemic practices of migration regimes and border technologies. STS calls for experimentation and greater reflexivity in writing that may contribute to the necessary revision of the epistemic and political premises guiding the study of how migration regimes are shaped and impact migrants' subjectivities.
- Diversifying methodological-conceptual repertoires, for instance, by encouraging researchers to follow actants through chains of translation, or by prompting them to attend to the ordinary methods used to accomplish 'practical closure' or the 'singularization' of multiple and potentially contradictory assignments of meanings.

In spite of nuances, there is a widely shared understanding in critical migration and border studies that more research is needed on how, in their encounters with border regimes, migrants create new forms of living and disrupt entrenched notions of what it means to be political, and of course on how they resist and appropriate governmental attempts to curb their right to move. STS seems to have lots to contribute here.

The workshop organizers – Nina Amelung, Cristiano Gianolla, Gaia Giuliani, Joana Sousa Ribeiro, Olga Solovova – not only aimed to facilitate the exchange of knowledge, experiences and views inside academia, but also beyond it. In a science café, *Mounir Affaki* (a refugee and volunteer for the Global Platform for Syrian Students), *Cyntia de Paula* (Casa do Brasil de Lisboa) and *Susana Gouveia* (Portuguese Red Cross) discussed questions on what science and technology do to empower migrants and refugees in Portugal, but also what could and should science and technology be doing to empower migrants and refugees in Portugal?

Figure 3: Science café



Taking the gathering during the workshop as a first step in building an international community of scholars at the intersection of STS/migration and border studies, several participants indicated that they would be interested in contributing to further capacity building, for instance, by hosting similar events. The workshop organizers will facilitate a joint publication initiative in 2019, as the first follow-up activity.

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“DOING DATA”: METHODOGRAPHY IN AND OF STS

Ingmar Lippert, Rachel Douglas-Jones

HOW DOES STS ETHNOGRAPHY MEET WHAT IT RESEARCHES? NOT PRESCRIPTIVE METHODOLOGY – WE WERE INTERESTED IN METHODOGRAPHY, DESCRIBING AND PROBLEMATISING HOW METHODS SHAPE DATA. 2018 SAW THREE RESEARCH EVENTS THAT FOCUSED ON DATA INFRASTRUCTURES AND PRACTICES IN PARTICIPANT OBSERVATION AND IN COLLABORATING WITH OTHER ACTANTS IN & AROUND THE FIELD. WITH THIS FOCUS, WE TURNED BACK AND LOOKED AT OUR OWN RESEARCH PRACTICES. THIS MEANT EXPLORING WHAT KIND OF PERFORMATIVE RELATIONS ARISE BETWEEN STS AND OUR TOPICS OF RESEARCH AND HOW THESE RELATIONS WERE MATERIALLY AND OTHERWISE SHAPED.

Amidst today's conversations about what data (big or small) might be, or could do, a reflexive moment has arisen within STS. Whilst STS scholars have been foundationally studying research practices – data handling and processing, translations, semiotic and material practices, epistemic and ontological shifts – these have been almost exclusively in fields of scholarship outside of STS. We have studied knowledge practices across the sciences, in spaces of engineering, technology, from laboratories to fields, governance practices to evidence regimes. But what happens when we turn back and look at our own research practices? In the take-up of ethnography within STS, what kind of performative relations arise between STS and its topics of research?

The Spring and Summer of 2018 saw three interrelated research events on these questions. They took form as a series of conversations in Berlin and Lancaster, organised by Ingmar Lippert, Rachel Douglas-Jones, Tahani Nadim, Jörg Niewöhner as well as Julie Sascia Mewes (and supported by Göde Both).

Fig 1: Lively discussion within Humboldt University STS Lab's meeting space

Source: Alexandra Endaltseva



Critique of method is not without precedence, and a series of important moments from different eras informed our discussions. In 1975, Paul Feyerabend wrote *Against Method*, setting the tone for the questioning to come. His rallying cry opposed the strict constraints that methods can impose, which Feyerabend considered weakening epistemological openness. Down the decades, John Law's 2004 *After Method* speculated on the practices of analysis and writing in the wake of methods deconstruction, questioning stereotypical UK social science methods training. *Inventive Methods* by Lury and Wakeford (2012) is an inheritor to these questions, turning to specific devices in the doing of epistemic work. Their range of method devices ran from tape recorders to the conceptual work of "configuration", elaborated by Lucy Suchman. Even though these texts were very much about the relation between methods and the making of worlds, the collection did not focus on narratives of how certain kinds of method assemblages, used in specific places at specific times, produced researchers' own particular accounts.

The term methodography arises in the work of STS ethnomethodologists Christian Greiffenhagen, Michael Mair and Wes Sharrock (2011) which contemplates the difference between methodologies that are prescriptive and studies that allow for the problematisation of qualitative research method within the account given. At that point, STS and its methods did not arise as an empirical field for their questions – something that arose as a point of discussion at the EASST/4S Roundtable 'Does STS have problems?', organised by Noortje Marres and Endre Dányi in 2016.² Yet typically texts that question STS methods waver between a prescriptive-normative take and a descriptive problematisation (e.g. Hyysalo, Pollock and Williams, forthcoming; Lippert 2014).

Focussing on descriptive problematisation of STS methods-in-action, Lippert and Verran's (2018) special issue in the EASST Journal *Science & Technologies Studies* highlights how different modalities of performing an analytics produce different accounts. Such contemporary scholarship increasingly calls for more detailed engagement with how STS researchers do and interpret specific methods, research designs and analytics.

Answering this call, the three events of 2018 wove conversations across twenty authors, six commenting contributors, a roundtable with five scholars, a keynote by John Law and a writing methodography session chaired by Rachel Douglas-Jones and Estrid Sørensen.

DEVICES AND COLLABORATIONS

Papers at these events ranged vastly in terms of their empirical focus. From archives to borders, policing to residential care, Internet of Things device use at home to public environmental agencies, call centers to tourism, the contributions all attended to how methods shaped the STS analyst's epistemic practices.

Themes that arose in discussion were those that discussions of ethnography often produce: the responsibilities of researchers, anxieties about interventions, the work of description, and the politics of collaboration. But in the 'graphic' component of methodography, participants sought not introspective accounts of method but extrospective ones, resulting in ethnographic accounts of what researchers actually do in the field. Method came to be a defamiliarization technique, allowing for (amongst other things) attention to performativity and materiality.

Inspired by Farías (2016), and by the EASST2018 theme of meetings, collaboration arose as a focusing term. It was also a contested term. In research, researcher and researched meet, and participants were encouraged to consider meetings of humans and nonhumans, their concerns, voices, material or immaterial presences or absences. In research, devices are met and employed, though these might be unruly, too. Discussion ranged from the implied positivity of collaboration ("do-gooder consensuality") versus its potential to allow friction within forms of collective that do not need or presume "common ground". We discussed

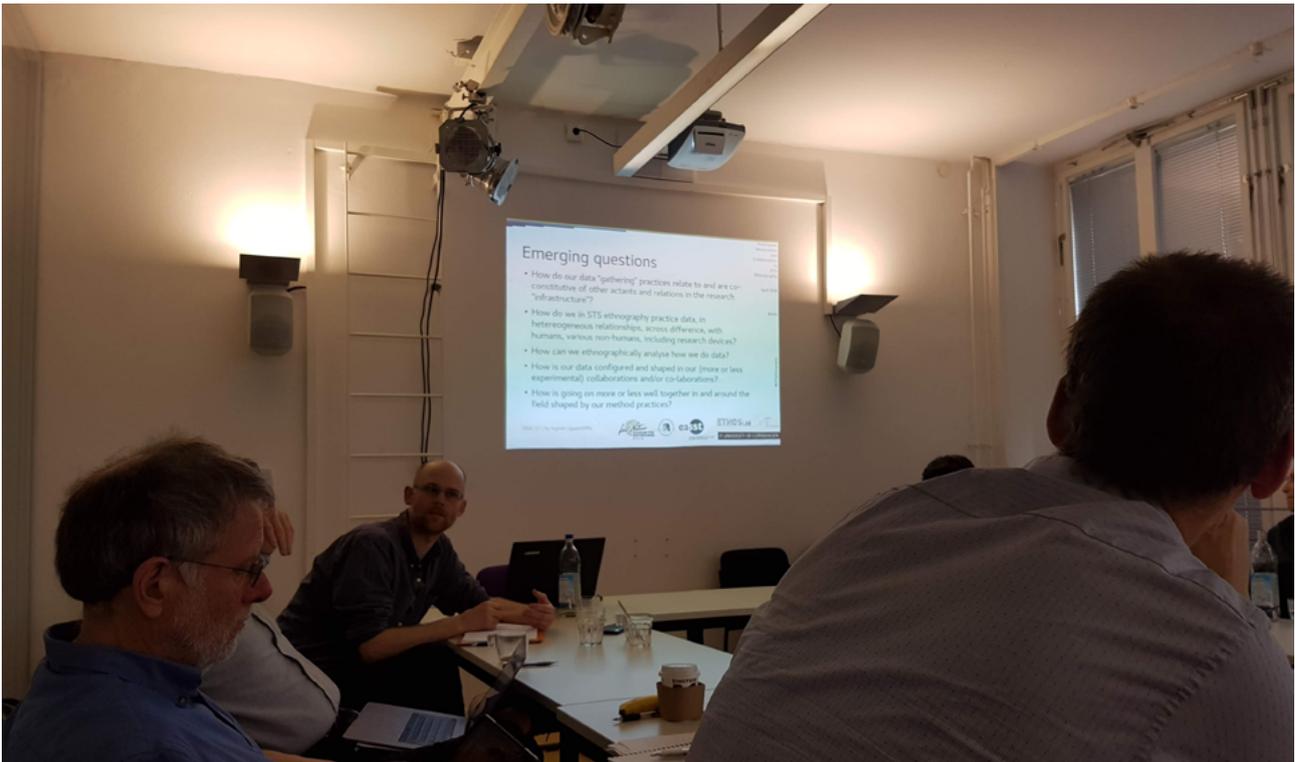


Fig 2: Workshop introduction (left: John Law; center: Ingmar Lippert)

Source: Ildikó Plájás

differing degrees of togetherness, with other researchers and those participating in the field, including those with whom we might write.

Several papers highlighted the configuration and shaping of roles in the network of socio-material relations between researcher, artefacts, devices, human interlocutors. This resonated well with method devices, found in Lury and Wakeford's book, which include invitations to engage material, tangible entities like photo-images, cameras, lists, screens but also categories, research protocols and modes of relating. In discussions, participants speculated that STS, which has honed its attention on the politics of classification, categories and ordering, may need to think differently about the ethnographic openness, embodied learning, and knowledges of others that are brought together in moments of analysis. Several papers found spaces to describe the openness they had sought through methods, whether in "pausing" (Melina Antonakaki) or in "experiment" (Ryenne Bleumink, Lisette Jong and Ildikó Plájás), as students set the knowledge practices that they were studying against the knowledge practices they were using in their analyses.

Material devices were also foregrounded to tell and explicate methodography. Stefan Laube, for example, turned to clothing and costumes as participants in material practices that configured his ethnographic presence. A range of papers engaged with how rooms and scapes took part in configuring epistemic work, such as the location of a cab (Alexandra Endaltseva), snowy landscape (Eva Kotaskova) or a room at a home (Christine Hine). The papers showed how materiality – in both the seemingly well controllable research devices like a shirt or a camera as well as the rooms and landscapes encountered or tactically employed – was taking on multiple roles, such as of affordance and of obstacle.

Those with a background in anthropology brought a range of references to the table, from explicit reflections in that discipline on how ethnographers produce knowledge, and the legacies of *Writing Culture*. However, participants agreed that it was worth considering the specifics of STS ethnographic practices, from the kinds of situations where researchers do their work, to those where they are in co-presence with those they study, while then producing material about it. Along these lines, John Law's workshop keynote illustrated how being ethnographic about ethnography permits descriptions of research practices. He argued that



Fig 3: Round of introductions between junior and senior STS researchers

Source: Ingmar Lippert

what we do in the field interferes in field spaces, and working with others in the field allows us to attend to how different peoples' sensibilities inform the making of the work that emerges. Using stories of fieldwork with Marianne Lien in Norwegian Salmon fisheries, Law's paper highlighted his interest in ontological politics, the differences that are important to different people. Is it possible, he asked, to generate practices that are open to the possibility of going on well together *in difference* in particular contexts. Can we observe and write small stories, grounded in practices, that do not aim to bring differences 'together'? Not resolve 'away' ontological divergences, but work with the power and limitation of words to make evident differences that may operate outside of language.

The Berlin workshop closed with a practical writing activity called *Writing Methodography*, which involved writing and re-writing texts prepared for the workshop. The conveners, Douglas-Jones and Sørensen, acknowledged the challenge for junior scholars, whose initial writing task of bringing forth research and fieldwork, is reflexively compounded by the task of producing text that brings both the field and method's research effects into being simultaneously. From discussions of what ethnographies of observation look like to close readings of section of ethnographic texts and a 'walk and talk' around Berlin's Deutsche Dom, the workshop focused on what students had brought with them to the workshop. Post-walk exercises practiced the use of words in making worlds, holding the capacity to bring forward both field and methods together in description.

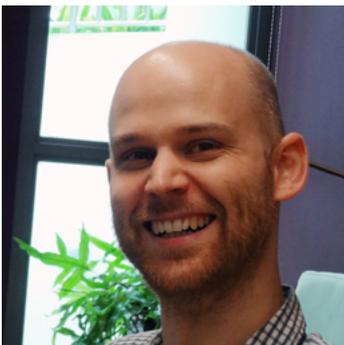
A fascinating thread in the closing discussions questioned what a focus on writing about method in an analytically descriptive rather than prescriptive sense does for STS. Scholars contemplated the potential for greater accountability through explicitness (Nadim), or voiced the desire for greater formalisation of STS's methods in a time of 'alt' facts and post-truths (Niewöhner). What it means to do ethnography in STS settings, and as reflexive STS scholars is not a topic that offers simple answers. It taps the basic questions that fascinate STS scholars – 'how do we know' and returns the 'we' to a disciplinary conversation.

JOIN THE METHODOGRAPHY CONVERSATION AND EXPLORATION!

We invite public conversation on the theme via Twitter's #STSethnography hashtag and we expect a Call for Papers in spring 2019 for a special issue on 'Ethnographic data generation in STS collaboration' in *Science & Technology Studies*.⁴ This SI is going to zoom in on STS scholars who engage in collaborative research, as groups of STS scholars as well as in collaborations with colleagues in other fields or non-academics. So we invite contributions on how ethnographic data is generated and transformed for and in STS analysis across a range of such collaborative contexts. The SI aims to lead beyond reflexivity accounts of positionality in STS ethnography and to establish a benchmark for the STS ethnographic study of how ethnographic collaboration configures its data. Julie Sascia Mewes joins Ingmar Lippert as co-editor and we gladly contribute to strengthening the journal's trajectory of exploring STS methods and analytical devices.

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Associate Professor Ingmar Lippert is an environmental sociologist, STS scholar and works between the Technologies in Practice research group at IT University of Copenhagen and the STS unit at Museum für Naturkunde Berlin. He ethnographically studies environmental governance and its data infrastructures and is most interested in questions of ontics, ontology and their accountabilities as well as responsibilities. Further research interests include organisation, work, cooperation and resistance as well as qualitative methods.



Associate Professor Rachel Douglas-Jones is an anthropologist, STS scholar and head of the Technologies in Practice research group at IT University of Copenhagen. She has conducted ethnographic studies of the governance and conduct of biomedical research and is most interested in questions of ethics, ethical review and sites of decision making. Further research interests include measures, committees, quantification, bodies, knowledge practices, standardisation, infrastructures of research and international collaborations.

VIEWS FROM THE EDGE: PROTOTYPING “RAPID” ETHNOGRAPHY IN MADEIRA

Michelle Kasprzak, Justin Pickard

IN MAY 2018, THREE SCHOLARS MET ON THE PORTUGUESE ISLAND OF MADEIRA TO DISCUSS THE PERSPECTIVES WE BRING TO OUR WORK IN STS AND ADJACENT FIELDS. INTENDING TO UNDERTAKE 10 DAYS OF EXPLORATORY “RAPID” RESEARCH IN THIS PARTICULAR FIELD SITE, RELYING ON “WALKSHOPS” AND ETHNOGRAPHIC PARTICIPANT OBSERVATION, WE INSTEAD EMERGED HAVING SHOT TWO 360-DEGREE “IMMERSIVE” DOCUMENTARY FILMS AND ATTEMPTED THE AERIAL MAPPING OF A KEY SITE WITH A KIT PROVIDED BY A CITIZEN SCIENCE NON-PROFIT.

Coming from different fields—contemporary art and curating (Michelle Kasprzak, University of Porto/Madeira Interactive Technologies Institute), journalism and digital media (António Baía Reis, University of Porto), ethnography and innovation studies (Justin Pickard, University of Sussex)—we three authors were united by an interest in what rapid, collaborative, and experimental research approaches could bring to an interrogation of questions around landscape, inclusion, digital technology, and imagined futures. In this, the “edge” of the title denotes Cabo Girão, a set of cliffs on Madeira’s southern coast looking out over the Atlantic, and, by extension, the island’s peripheral status. While our time in the field was limited, we found ourselves focusing on how these thematic concerns—questions which have animated our research elsewhere—are inflected by Madeira’s location on the outermost edge of Europe, an autonomous region of Portugal, but with a common colonial maritime history.

Fig. 1: Bay of Câmara de Lobos, 9 May 2018.

Courtesy of Justin Pickard



This experiment took place in the interstices of Kasprzak and Baía Reis's respective doctoral research projects. Kasprzak's work was already well underway, working with at-risk youths in Malvinas, a bairro in the fishing community of Câmara de Lobos, on Madeira's south coast. Involving these young people in practices of art-making, and working in close collaboration with a Madeira-born artist, her research looked at the role of curation in helping articulate local sociotechnical imaginaries (Jasanoff and Kim, 2009)—the visuals, symbols, shared understandings that influence the behaviour and decisions of members of this particular community. With Kasprzak's research as a backdrop, Baía Reis was using a multi-lens Vuze camera to capture 360-degree video footage, material for a couple of short "immersive documentary" films that would be experienced online or through wearable virtual reality headsets. In pursuing this goal, his overriding concern was with the kind of narratives that would be best suited to this emerging visual medium, arriving prepared with some ideas and "leads" regarding what to shoot in mind.

With this coincidence of individuals and research projects, and inspired by a list of provocative prompts on "experimental" ethnography from media anthropologist Gabriele de Seta (2017)—variously relaxing, reworking, or breaching the conventions of ethnography as method and genre—saw an opportunity for some wider methodological experimentation. Where much established STS ethnography would stretch for longer durations, often relying on the efforts of a single



Fig. 2: One of many signs inviting users—in Portuguese and English—to connect to free wifi available in Câmara de Lobos. Installation of the service and creation of the application cost roughly €31,000, with five initial access points targeting areas with the greatest footfall.

Courtesy of Justin Pickard

researcher, we asked what it could mean to work rapidly, at speed, drawing on the observations and products of three people. Writing on short-term ethnography as a research practice characterised by its “intensity”, Pink and Morgan (2013) borrow from design, corporate ethnography, and applied research to discuss how researchers can use more “interventional as well as observational methods”, working in ways that could be too intrusive to sustain over longer time frames. In our work in Madeira, much of this intensity came from being able to join *in media res*.

In this, early plans for a “walkshop”, described as a “workshop conducted through walking” (Wickson et al., 2015: 243), fall by the wayside, as, lacking social capital and a neat description of our aims, we prove incapable of convening sufficient participants beyond ourselves. Instead, our explorations unfold through person-to-person and small group interactions, visiting people in their own pre-existing milieus, and participating in situations linked to work already in progress. Seizing on plans already underway, we join the artist and members of the Malvinas youth centre for a three-hour boat trip aboard a replica of Columbus’ *Santa Maria*, originally built to represent Madeira wine at the 1998 Lisbon World Expo, since repurposed a tourist attraction with a tethered macaw, ship’s dog, and bar serving rum and cokes. We attend a Catholic mass, a wine-tasting, and a foreign academic’s Eurovision Party. We travel by cable car, walk the coastline, and explore the graves and ornamental masonry of the British Cemetery of Funchal—taking photos of Communist Party paste-ups, museum exhibits, EU-funded wifi infrastructure, and a government department’s appeal to return “octopuses weighing less than 750g ... to the sea to continue to grow normally.”

As a second set of departure points, we also drew from existing work on collaborative and event ethnography, forms of research that have relied on larger research teams to tackle time-limited or otherwise ephemeral sites—conferences (Brosius and Campbell, 2010), trade shows, state fairs (Paulson, 2009), and, in one case, a day-long taping of British television series *The Antiques Roadshow* (Weston and Djohari, 2018). While time in Madeira was limited, our field site was less clearly bounded, our group much smaller, more mixed, and less bound by hierarchy or institution. As a result of our self-consciously experimental orientation, there was little sense of what might constitute “success.” We had goodwill, but less common ground—something anthropologist Kirsten Hastrup (2018) discusses as part of reflections on her interactions with a group of biologists and archaeologists as part of a research voyage in northwest Greenland. With no common lexicon and fewer shared assumptions, Hastrup stresses the extent to which cross-disciplinary collaboration relies on those moments in which “the implicated disciplines become visible as human practices, embodied, and emplaced.” (Hastrup, 2018: 317) In such undertakings, the field site itself becomes that which is shared, an anchor and reference point. By opting to meet in the field, “the shared bodily experience of appropriating a landscape together” allows “a drifting of ideas” (Hastrup, 2018: 318), unsettling old certainties.

In Madeira, assisting Baía Reis in his 360-degree video work, work which opens “interesting scenarios in the interconnection of image making and emplacement” (Gómez Cruz, 2017: 28), seeing his criteria for suitable material foregrounds some key distinctions between journalistic storytelling and ethnography; between the deliberate, conscious orchestration of meetings and cultivation of story leads, a logic driven by time constraints and the practical difficulties of maneuvering bulky equipment between sites, and a more open-ended, explicitly opportunistic mode of research. Shooting footage, an aggregation of material captured by the camera’s multiple lenses, “stitched” together by software later, we also encounter a tension between the evident expense of the recording equipment and the filmmaker’s desire not to “break” audience immersion by appearing in the shot. Such calculations lead to some awkward scrambling as we attempt to maintain a direct line of sight on the equipment while ourselves remaining concealed behind rocks or landscape features. In Câmara de Lobos, we meet with “Bailinha”, a master boat

builder resident in Malvinas. Having retired from the shipyard, he now works on other wooden products, primarily for tourists, while making attempts to train a younger generation in carpentry skills. At the time of our meeting, he is threatened with eviction from his workshop in a disused government on the seafront, a space granted to him by a former council leader, to make way for the ongoing development of the bay. Interviewing Bailinha, we then visit his workshop, where Baía Reis sets up a camera to obtain 360-degree footage of the interior, making sure to capture the craftsman in action, using the relevant tools and equipment. With the shot level, he closes the door, and steps outside. The audio from the interview will play over this footage, anchoring the story in a particular interior space.

Fig. 3: Inside Bailinha's studio, prior to his eviction. The model boat's name, *Espada Preta*, translates as 'black scabbardfish', a regional delicacy.

Courtesy of Justin Pickard



As part of our more explicitly ethnographic observations, we visit *La Vie Funchal*, a four-storey shopping mall in the centre of Funchal, described by one local as a place people go when they want to “escape the island”. Seemingly unconcerned with history or identity, and with little linking it to its immediate surroundings, it is easy to imagine it having been copied and pasted from somewhere else—though, in fact, the architect was Ricardo Bofill, designer of Catalonia’s iconic 1975 public housing project, Walden 7. At the time of our visit, the mall is hosting a temporary exhibition of the island’s first Captain-Majors: João Gonçalves Zarco, Tristão Vaz

Teixeira, and Bartolomeu Perestrello. Intended to “acknowledge the men who led the colonization process of these Atlantic islands”, marking and commemorating “Madeira’s 600 years by reviving and reinforcing the connection of community to heritage and its past”; the organising frame has onlookers declare themselves to be the heirs of these men, with cut-out hole pictures, reproductions of exploration instruments including a sextant and armillary sphere, and a model caravel, one of the small sailing ships developed to explore the Atlantic and West African coasts. The setting is jarring in its incongruity, with the trappings of Portuguese colonial expansion displayed against a backdrop of escalators, potted palms, and bureaux de change.



Fig. 4: Exhibition commemorating the first Captain Majors of Madeira, at La Vie Funchal, part of celebrations marking 600 years since the discovery of Madeira and Porto Santo by the Portuguese.

Courtesy of Justin Pickard

Led by Kasprzak, we attempt an aerial mapping of the Malvinas housing projects, using a balloon mapping kit produced by Public Lab, a Boston-based nonprofit group. First devised as part of a response to the information blackout surrounding the 2010 BP Oil Disaster in the Gulf of Mexico, capturing hundreds of thousands of digital photos that could be “stitched” together and uploaded to Google Earth, the kit would usually comprise string, protective gloves, rubber bands, zip ties, a carabiner, and 5.5ft weather balloon. Kasprzak’s institution provide a digital

camera modified to enable continuous shooting, but we have to supply our own helium balloons—obtained from a Funchal party supplies store, then quickly bundled into the back of a taxi. With official maps and floorplans of Malvinas difficult to come by, but required as a base for the next stage of the art collaboration, our intent is to replace this information with digital aerial photography. Following a YouTube tutorial from a local youth centre’s internet cafe, we assemble a harness and cradle for the camera, sawing through a plastic drinks bottle with a knife. Ultimately, the balloons lack the required buoyancy; with inclement weather and insufficient height, our attempts to guide the barely-airborne device through the neighbourhood is little more than a curiosity for the neighbourhood’s residents.

Fig. 5: Balloon mapping in Malvinas.

Courtesy of Justin Pickard



With the “edge” of Cabo Girão as our backdrop, this research prototype certainly succeeded in achieving the experiential “intensity” of encounter recognised by Pink and Morgan (2013). We may not have realised been able to sustain a single collectively-held perspective on this fragmented network of field sites (see Burrell, 2009), but the shared experience of encountering and striving to make sense of a particular landscape helped us to engage substantively with each others’ divergent, often unfamiliar practices of research. Though the organisation of “walkshops”—as an original stated aim—may have proved unworkable, we made the

most of the readymade situations and spaces of encounter to which we could most easily gain access. Our limited time in the field was a generative constraint, enabling us to sustain an intensity of engagement that would have otherwise been impossible. Visual material and outputs also had a particularly important role, with Baía Reis' "immersive" video footage and Kasprzak's bricoleur assembly of an apparatus capable of producing aerial photography both providing an effective external scaffold and accessible entry point for participation and informant engagement.

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STS EVENTS

DOING DIFFERENCE DIFFERENTLY IN NORTHERN AUSTRALIA TODAY: THE BEGINNINGS OF TOPENDSTS

TopEndSTS group

TOPENDSTS IS AN EMERGING GROUP OF STS SCHOLARS AND PRACTITIONERS BASED IN THE NORTH OF AUSTRALIA. MANY OF US HAVE WORKED TOGETHER FOR SOME TIME; HOWEVER, IT WAS ONLY AFTER THE EASST LANCASTER AND 4S SYDNEY CONFERENCES THIS YEAR THAT WE DECIDED TO FORMALLY NAME OURSELVES. THIS COMING TOGETHER AS A GROUP RECOGNISES THAT THERE ARE PARTICULAR RESEARCH SENSITIVITIES THAT WE WOULD LIKE TO CULTIVATE AND SHARE. ALSO, THAT THERE ARE CERTAIN GENEALOGIES OF STS SCHOLARSHIP – ARISING OUT OF COLLABORATIONS BETWEEN RESEARCHERS AND ABORIGINAL ELDERS AND KNOWLEDGE AUTHORITIES – WHICH MANY OF US DRAW ON AND SEEK TO MAINTAIN. HERE WE TALK ABOUT THE BEGINNINGS OF THIS NEW GROUP, AND WELCOME THE OPPORTUNITY TO WORK WITH OTHERS AS WE GROW.

Conferences are well known for the opportunity they provide to spark our imagination and to generate productive networks between researchers from different universities and institutes. Our small group of scholars from Charles Darwin University (CDU) in the Northern Territory of Australia experienced an interesting twist on this narrative recently. Our attendance at two major STS conferences – EASST2018 Conference in Lancaster in July and the 4S Conference in Sydney last month – revealed to us that through the eyes of (some) others, there was seemingly a clear and coherent ‘hub’ of Darwin based STS researchers. This was welcome news for us and an understanding we are now seeking to cultivate. However, it was certainly not a realisation that we had made ourselves!

Fig. 1 Presentation by TopEndSTS member Jennifer Macdonald at 4S Sydney, 2018.



This year was the first-time scholars from northern Australia have travelled together to attend large, international STS gatherings; an effort significantly assisted by this year's location of 4S in Sydney. At these events we have found the opportunities for engaging with other STS scholars invaluable. Over the course of delivering and listening to presentations, and through formal engagements and informal networking, we came to learn more about current debate and issues in STS, as well as to develop a stronger sense of the approaches and practices that we share. While we have been working together for a number of years and are collaborating on research and teaching projects, it took the experience of being at these conferences to realise that there were certain research commitments we embody and genealogies that we hold in common.

Pushed by the experience of these conference events, we selected a title for our emerging group that speaks to our local situations, as well as our involvement in broader STS networks – 'TopEndSTS'. For those not familiar with the term, the 'Top End' is generally used to indicate the northernmost parts of Australia, and for us it evokes a sense of situated research which includes and engages disparate climatic environments, complex interplays of connection and 'remoteness', and the co-presence of many differing Western and Indigenous modes of people-place making.

As a group, we see TopEndSTS (sometimes the twitter handle @TopEndSTS, sometimes just a name) as a growing and evolving group of STS scholars who are generally, though not always, based in northern Australia. As scholars we often juggle several hats, with our commitment to 'STS' often complementing other disciplinary affiliations (for example, in anthropology, human geography, resilience and heritage studies) and our position as scholars often merging with other professional roles (for example, as language workers, government bureaucrats, arts practitioners and archaeologists). However, in developing and participating in TopEndSTS, we all share a commitment to supporting research work and conversations around relational, and engaged, STS research practice.

STS is far from mainstream in northern Australian research circles; however, as a group we are fortunate to be part of a rich and unique legacy of STS scholarship, with its origins embedded in collaborative practice between researchers and Yolngu and other Aboriginal elders and knowledge authorities. The STS we

Fig. 2 Water work with Traditional Owners and hydrogeologists at Nilatjirriwa, waterhole on Milingimbi Island, East Arnhem Land.



undertake at Charles Darwin University remains strongly connected to Helen Verran's (2018) concerns with 'how differences are generated in humans going-on together'. These concerns began in her time in Nigeria and were consolidated in her work in Arnhem Land in the 1980s. Back then, participating in a policy era focused around self-determination and bilingual education for Aboriginal Australians, Helen's work was carried out under the guidance of Yolngu Aboriginal elders, and involved careful negotiation of the knowledge practices mobilised in education curricula and the teaching of maths in high school classrooms. This acted as an antidote to the assumed superiority of non-Indigenous students and Western knowledge and became fundamental to the philosophy and knowledge making practice of the Yirrkala Community Education Centre in Yirrkala.

These early beginnings, and long-term collaboration with Michael Christie, led to the development of a vibrant research and consultancy practice at CDU (see [Yolngu Aboriginal Consultants Initiative](#) and [GroundUp](#)). This research continues to mobilise the same philosophy of pragmatic, ground-up knowledge production and agreement making which can be seen as connecting with Yolngu Indigenous metaphysics and forms of pragmatism present in the Western tradition (Verran and Christie, 2011). Today, working across the Northern Territory, TopEndSTS scholars and post-graduate students are continuing to find careful and collaborative ways of navigating the complex institutional landscapes of the region. Our work includes: developing institutional practices within and beyond the university which support collaborative knowledge work (see for example, [Yolngu Research@CDU](#) and the [Living Archive of Aboriginal Languages](#)); cultivating design-oriented approaches for infrastructures of policy evaluation (see for example, [Remote Engagement and Coordination – Indigenous Evaluation Research](#)); and problematising received concepts of land and sea ownership, climate adaptation, economic development, language and education as these concepts configure emerging realities in more or less colonial ways (see for example, [Disaster Resilience Management in Aboriginal Communities in Darwin](#) and [Cross-Cultural Management of Freshwater on Resource-Constrained Islands](#)).

We now recognise such work as characterising TopEndSTS and see our work as inhabiting a range of settings and situations in the collective life of northern Australia and beyond. We are developing scholarship within complex nodes of cultural, social and economic practice in which the local, the national and the global entwine in unique ways. This work, mostly funded by government and non-government organisations interested in doing their work differently, centres on issues

Fig. 3 & 4 Collaborative design of approaches for evaluating government policy practices in Ngukurr in South-East Arnhem Land and at Charles Darwin University in Darwin.



of current concern in the ongoing interactions between Aboriginal people and their places and communities, and the non-Indigenous organisations and agencies with which they engage.

Our scholarship takes seriously a metaphysics of emergence where new and unique worlds and ways appear in careful collaborations and practices in place. This provides the core metaphysical commitment of all this work. In our approach, received categories and practices continue to be transformed, engaging particular Indigenous approaches to knowledge production in the doing of a contemporary northern Australian STS. In our day-to-day work, the TopEndSTS group does our best to inhabit an epistemic landscape which could be considered merely an argument (Deleuze, 1994; Whitehead, 1978), but which our research inhabits as an actively embodied collective form of life as we, explicitly and in good-faith, mutually articulate our differences as we go on together doing those differences.

Spurred on by the EASST2018 and 4S Conferences, TopEndSTS is now hoping to become a vibrant, generative hub of shared ideas and collaborations. To help strengthen our understanding of what it means to do STS and to bring our team together, we convene a fortnightly workshop to discuss classic and contemporary STS texts, as well as creating opportunities to share our own writings for mutual encouragement. In 2019, we are planning an STS seminar series and online Cosmopolitics colloquium to share more of our own research and hear from others working in the field. We offer an open invitation to visiting scholars to connect with us. We particularly welcome Indigenous speakers to share their own experiences and ideas, and to invite collaborations and generative knowledge practices. Living and working as STS scholar-practitioners in northern Australia means that we cannot just recognise the presence of multiplicity in knowledge practices, but also need to learn to work with this multiplicity in engaged and productive ways. We are always exploring ways that 'difference can be done differently', and we look forward to sharing our stories and making a unique and valuable contribution to the STS conversations and debates as our work continues.

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