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EDITORIAL

HOW TO BE A GOOD HOLOBIONT? RELATING DURING THE COVID-19 PANDEMIC.

Sabine Biedermann

Holobiont in biology refers to “an organism plus its persistent communities of symbionts” (Gilbert 2017: M73) and was used for decades by scientists focusing on plants. As Scott F. Gilbert explains, animal-focused biologists have struggled to conceive of animals as holobionts, because the concept undermines the deeply rooted notion of an animal’s anatomical, genetic, developmental, immune, physiological, and evolutionary individuality (ibid: M74). The term highlights the never-ending processes and constant multispecies interactions in which a body is immersed, which make up the body and enact its bodily functions (or malfunctions) and needs. Our bodies don’t end at the skin; they contain a myriad microorganisms that flow from one body to the other, mostly inadvertently. This passage of tiny messmates (cf. Haraway 2008) from one body to the next has become suddenly noticeable and feared, with the spreading of COVID-19. Like a well functioning infrastructure, our microbiomes remain silent and invisible, until they are a disrupted, usually portrayed as an attack (cf Martin 1990).

COVID-19 is, of course, not considered to be a symbiont. The war narrative, accurately portrayed 30 years ago by Emily Martin in her work about narratives of the immune system (1990), has been prevalent in discourses about the novel coronavirus. We are all fighting together, as bodies and as humans, against this invisible invasion that puts our lives at risk and dramatically changes everyday existence. The material conditions of our relations, and of our bodies themselves, have changed. The virus transgresses the skin-boundedness of the self; we become increasingly alert to ways in which invisible entities get into us and damage our organs and immune systems.

In order to protect the health system and bio-socially vulnerable people, we have been asked to take responsibility for our microbial trails and to reduce them as much as possible. We have been asked to become skin bounded, to retain the flow and overflow of the microscopic entities comprising us. This is most effective if we stay home alone. But staying home alone has its own consequences. So, we have been bombarded with advice and instructions of how to avoid the spreading of COVID-19. How to properly wash hands; how to put on and remove a face mask; how to open a door without touching the handle; how to do home office; how to do sports indoor; how to stay healthy in quarantine; how to reorganize your kitchen, and so on. Human touch and physical relations with others have become a privilege, but they exist in confinement: big families living together, fearless teenagers, people recovered from COVID-19. The virus has highlighted ways by which we live in different bio-social conditions: for some, the threat of the virus to their immunosuppressed bodies is the biggest risk; for others, staying home with abusive cohabitants, or staying home alone, is a dangerous torment. For some, the home office is a dream come true; for others, it is a task impossible to master in the presence of children or in the absence of an appropriate infrastructure. Our biologies do not exist by themselves; they are entangled in social relations and material conditions (cf. Niewöhner and Lock 2018). A virus has many consequences, not all located within the human body.

As I sit at my dining table staring at the faces of my colleagues, frozen in weird gestures, on the screen of my laptop, probably missing crucial information because of my poor Internet connection, looking at my dry hands and greatly missing the bodily co-presence of my colleagues, I can't help to wonder: Is this what it is like to be a good holobiont in times of a pandemic? Is this how I take care of my microbiome and all the other microbial compositions out there?

It is complicated enough to care for and participate in the complex choreography taking place with humans, animals and materials around us without acknowledging the vast amount of invisible life that flows inside and between us. But now we are collectively *seeing* the invisible and being asked to account for it. Perhaps, we should be wondering how to be a good holobiont, and acknowledging the diverse biosocial vulnerabilities inside and outside of us, not only in times of pandemic, but all the time. Remember that germophobic times bring upon massive death on another scale, that of the microbes. As we wash our hands again and again and disinfect surfaces, our little symbionts are dying in masses. Remember that antibiotic resistance is out there, threatening the future of animal health, including our own. Remember that we are always interconnected. Remember that contagion is always a problem for infants, the elderly and for immunosuppressed humans. Remember that microbial activity is crucial to life on earth. It is a hard balance to master, between exposure and protection, and it takes a lot of experimenting. And certainly as STS scholars we should be well equipped to look into these experiments and developments. As Salla Sariola said at the end of her contribution to the Nordic STS conference (2019), citing Scott Gilbert:

It is "the time of microbes"

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STS MULTIPLE

MAKING A RESEARCH COLLECTIVE – STS HELSINKI

Kamilla Karhunmaa, Jose A. Cañada, Jaakko Taipale

WHEN AND HOW DO COLLECTIVES COME INTO BEING? WHAT EXISTS BEFORE BEING NAMED AND HOW DOES IT CHANGE AFTER? STS QUESTIONS ARE UNAVOIDABLE WHEN PRESENTING THE ORIGINS OF AN STS RESEARCH COLLECTIVE. AKIN TO MOST ORIGIN STORIES, IT IS DIFFICULT TO PINPOINT A SPECIFIC STARTING POINT IN TIME FOR ITS BIRTH OR A LINEAR AND COHERENT NARRATIVE FOR STS HELSINKI. RATHER, THE COLLECTIVE HAS EMERGED AND GROWN, AND CONTINUES TO DO SO, THROUGH THE INVOLVEMENTS AND ENGAGEMENTS OF THOSE WHO PARTICIPATE IN IT. BELOW WE TELL THE STORY OF STS HELSINKI, LOOKING AT THE ORIGINS BEFORE NAMING OUR COLLECTIVE DURING THE AUTUMN OF 2016 AND EXTENDING TO FUTURE PROSPECTS.

ORIGINS

STS Helsinki arose from a sensation shared by junior and senior scholars at the University of Helsinki that we lacked sufficient forums and spaces for STS at the University. Many of us gathered monthly at the TOTEMI seminar for doctoral students working under the broad banner of “Knowledge, technology, and environment”. Despite being a doctoral seminar, TOTEMI attracted both junior and senior scholars alike since it was at the time the only space to discuss STS regularly. Like many places where STS scholars gather, the seminar was an important site to encounter others employing similar concepts and reading the same texts. Some of us who were doing our doctoral studies came from disciplines where only a few others shared an interest in STS or had even heard of it. At the same time, many of us doctoral students realized the extent of the intellectual field and how little training we actually had received in STS. This stems from Finnish universities lacking a Master’s programme in STS and STS being taught rather sporadically in Finland. These realizations quickly spurred reading groups and informal gatherings to support one another during our doctoral studies and dissertation processes. These encounters were always supported by more senior and experienced STS researchers working in Helsinki, who offered informal guidance and relevant STS content to the discussions.

It did not take long before many of us who gathered around STS felt that something more open to the wider academic community was also required. The desire to have a more public presence face for STS in Helsinki originated from our personal experiences of how much luck was actually required to stumble upon other STS scholars. The typical story consisted of “you should meet researcher A” narratives. However, while such chains of recommendations lead to finding others working on STS, they hardly contribute to a sustained and consistent development of STS in Helsinki. We wanted to correct this with a clear online presence, public seminars and increased collaboration, allowing anyone interested in STS to easily find like-minded scholars and STS activities.



Fig. 1 Early morning fog at Lammi biological station, October 2018.
Photo: Kamilla Karhunmaa

WRITING RETREATS

While part of the origin story of STS Helsinki arises from the typical frustration of lacking a viable research environment, another part tells the story of building that collective ourselves. One of the key sites where STS Helsinki was formed are the biological research stations of the University of Helsinki. Located in beautiful seaside or lakeside locations a couple of hours from Helsinki, the research stations have functioned as sites for long-term fieldwork in biology and forestry. They also offer the chance for other scholars to enjoy a peaceful environment and work-oriented routines to productively focus on tasks that benefit from that isolation, such as writing or analysis.

Breakfast, lunch, coffee, dinner, sauna... And some writing in between. Writing retreats at Tvärminne and Lammi have always benefitted from clearly structured days. When all your basic needs are covered for by the research station facilities and you are surrounded by beautiful scenes, it's much easier to delve into academic work. Our writing retreats have tended to combine the peace to write with social lunches, walks and sauna, fulfilling a rather idealized view of academic work – at least for a couple of days each year.

It is in these spaces in between that STS Helsinki slowly began to take its shape and form. While many of the founders of STS Helsinki are sociologists by training or academic label, it was quickly clear that our research interests cannot be fastened to a single discipline. Nor would this development had been possible at the University of Helsinki, where disciplines and teaching were being merged under the broader banner of social sciences. At the same time, like many STS efforts in Europe, we struggle with carving out a space for STS in situations where disciplinary expertise is valued, as two of our members, Jose A. Cañada and Jaakko Taipale (2020), outline in their recent text on institutionalizing STS in the Nordic Countries.



Fig. 2 STS Helsinki member (from left) Tomi Lehtimäki, Lotta Hautamäki, Kamilla Karhunmaa and Jose Cañada enjoying the seaside sunshine in spring 2017. Photo: Heta Tarkkala

GOING PUBLIC

As we know from STS, things often happen and practices evolve before we know or name what is going on. Likewise with STS Helsinki, we started a [blog](#) in 2016 with the idea of showcasing our research and that of others working on STS. Together with the blog, we opened a [Twitter](#) account to publicize our work and share STS-related news and events. Around the same time, we decided to hold an annual STS panel at the national *Sociology days*, a popular yearly conference hosted in Finland.

A couple of years on, we can reflect on what has been achieved. Hosting a blog is hard and unfortunately often ungrateful work: finding authors, pleading for texts, editing texts... At the same time, the online space in Finland is filling up with other initiatives working to bring academic perspectives to new audiences (such as [Ilmiö](#) and [Versus](#)), in which many of our members have been writing. With these collaborative efforts reaching wider audiences, hosting our own blog does not seem as valuable large anymore. Meanwhile, the importance of Twitter for networking, sharing research, events and news has increased. Twitter has enabled quick communication of what our members are doing and a great way of interacting and continuing our relationship with other STS units and researchers around the world.

LOOKING FORWARD

STS Helsinki was named a “research collective” only in the last year or so. Before that, while we had discussed at length what types of things we want to do and what forms of collaboration we want to promote, we had not really found a purpose for specifically naming “what” we are. As discussed by Heta Tarkkala et al on our current activities, our members are conducting STS research on a wide range of topics. As a collective, we do not share a thematic orientation to particular topics. Likewise, STS Helsinki researchers each have their own theoretical and epistemological inclinations within the broad field of STS. Growing from the bottom up, we are not conducting research under the auspices of a research director, but rather encouraging one another along in both distinct and collaborative efforts. As a research collective, STS Helsinki exemplifies how doing things together leads to doing more things together and creating new forms of collaboration.

As a result, many recent efforts have gone into increasing STS activities at the University of Helsinki with the objective of consolidating the group itself and welcoming scholars not directly engaged with STS to our discussions. The *STS Helsinki Seminar Series* has been a way to invite both Finnish and international scholars to present their work to the Helsinki community. STS teaching at the faculty has increased recently with both an STS classics reading seminar for Master and PhD students and new courses on environment & STS. The aim is to engage younger generations and spark their interest, ensuring the continuity of STS. At the doctoral level, a course consisting mostly of STS perspectives on science in society has been running for a few years, also providing visibility to STS. Finally, seminars, workshops and data labs are used as ways to share our work in the collective, to improve it and to find common ways of thinking and talking STS.

Despite all these activities, challenges for the collective’s viability remain a key concern. Our will to organise a session on the institutionalization of STS in the last Nordic STS conference in Tampere, grew out of a concern for that viability. Does STS Helsinki require more traditional institutional structures to survive? Or can it depend on its rather rhizomatic modes of organization that rely upon the shared efforts made by its members in the nooks and crannies of busy academic schedules? While these questions remain (and probably will stay) unanswered, we have found in the diversification of activities - i.e. teaching, public seminars, collaborations with other STS groups or departments - a way to somewhat to consolidate the public image of STS Helsinki, and to secure the continuous involvement of its members and the addition of new ones.

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Kamilla Karhunmaa is a doctoral researcher at the University of Helsinki. Her PhD examines the relationships between change and stability in energy policy and the ways in which energy transitions are debated and negotiated in Finland. She is interested in environmental questions and knowledge-making practices.



Jose A. Cañada is a postdoctoral researcher at the University of Helsinki, Faculty of Social Sciences. He has a PhD from the University of Helsinki (2018). He has been especially interested in the production of knowledge and material practices associated to sociotechnical controversies, working on topics such as pandemic preparedness and response, biobanking and the development of water infrastructures. He is currently working in the project Social study of antimicrobial resistance: health care, animals, and ethics (SoSAMiRe), where he studies issues related to AMR global policy-making, knowledge production, and national implementation.



*Jaakko Taipale works currently as a researcher at University of Helsinki. His ongoing doctoral study explores meta-expertise, decision making, effects of standardization and methodological approaches to explaining agency through a case study that features a legal dispute over a medically controversial issue. His doctoral work has been published at *Public Understanding of Science and Social Studies of Science*.*



STS HELSINKI - OUR CURRENT ACTIVITIES

Heta Tarkkala, Aaro Tupasela, Salla Sariola

EARLY STS HELSINKI ACTIVITIES WERE MOSTLY ATTACHED TO A DOCTORAL SEMINAR CALLED TOTEMI (KNOWLEDGE, TECHNOLOGY AND ENVIRONMENT) IN THE UNIVERSITY OF HELSINKI. WHILE THE SEMINAR REMAINS A CORNERSTONE FOR THE COLLECTIVE, ESPECIALLY FOR MORE JUNIOR RESEARCHERS, STS HELSINKI HAS CONTINUED TO BUILD NETWORKS THROUGH THE ORGANIZATION OF PUBLIC EVENTS, JOINT PROJECTS, AND ACTIVITIES TO SUPPORT EACH OTHER'S RESEARCH AND CAREERS. PUBLIC SEMINARS, DATA LABS, TEACHING, AND CONFERENCE PANELS ARE SOME EXAMPLES OF HOW STS HELSINKI CONTINUES TO GROW IN THE INSIDE BY REACHING TO THE OUTSIDE.

Over the years, STS Helsinki has drawn together researchers with a longer background in the field, as well as early career researchers. STS research is distributed between several universities and departments. STS Helsinki has provided the possibility to build collaborations over institutional borders and allows a shared sense of coming and working together out of intellectual interest. In an academic world of constant changes in terms of funding, affiliations, collaborations and research projects, STS Helsinki has proven to be a community that helps researchers stay connected even during discontinuities in terms of funding or contracts.

Currently, STS Helsinki is a lively collective that meets regularly at the STS Helsinki Seminar Series, where we have had visiting talks from scholars from both Finland and abroad. During 2019, for example, Sheila Jasanoff, Stephen Turner and Nik Brown presented their research at the seminar. Moreover, the *Knowledge, Technology and Environment PhD Seminar (TOTEMI)* at the Faculty of Social Sciences, University of Helsinki, with its 6-8 annual seminar days, is a venue where many of us meet to discuss STS by commenting on manuscripts of the current PhD students. In addition to research seminars at the University of Helsinki Faculty of Social Sciences, STS related teaching and supervision is an important activity that contributes to the development of the community. Courses ranging from AI and society to environment and sociology of health, illness and medicine, not to mention STS focussed introductory courses, [offer students a range of courses and topics to choose from](#).

Additionally, the PhD Data Lab allows junior members of the STS Helsinki community to present short excerpts from their data and data analysis and receive help in developing their work further to the writing stage. The community also regularly goes away on writing retreats where members get a chance to focus on intensive writing and commenting of work in progress. We regularly publish blog texts, conference and workshop calls, and job advertisements on our STS Helsinki blog (<https://blogs.helsinki.fi/sts-helsinki/fi/>), and disseminate information about our activities through our social media accounts on Facebook and Twitter. The blog has been a venue for STS researchers to publish their texts for a popular audience.



Fig. 1 The TOTEMI doctoral seminar in its meeting of December 2019.

Members of the collective have their own research focuses and institutional settings, and deploy and develop a wide range of STS approaches in terms of theories, concepts and empirical focus. Even though STS Helsinki is not devoted to a strictly defined theoretical or methodological program, there are numerous shared projects and interests many of us are involved with. The following examples offer a glimpse on some of the research activities taking place within the STS Helsinki community.

[The Cultures of Cultures research group](#) studies microbes from various perspectives across five different research projects. The projects take a comprehensive look at human-microbe connections focusing on antimicrobial resistance (AMR) in global contexts; how lay and scientific communities are constructing a post-antibiotic world; and develops experimental methods for studying microbes via fermentation. This work develops a theoretical opening in the field of STS as regards to social study of microbes. Moreover, these projects come tied with a strong focus on tackling AMR in collaboration with environmental and clinical microbiologists.

Research is also conducted around topics related to biomedicine, genomics, artificial intelligence, critical data studies, as well as reproduction and health data. For example, in the project [VALDA: Valuating Lives through Infertility and Dementia](#), value creation and governance related to reproduction and ageing are studied. In the coming years, theories and conceptualisations for example [about the role of affect and emotions in the processes of biotechnological change](#) will follow based on the empirical study on vaccines. There are also scholars working on the intensification of data sourcing from the viewpoint of health data. This work has contextualized the recent development of [intertwinement of health and innovation policies](#) and continues by elaborating on national strategies on leveraging health data and using it for AI based applications. Biobanking and health data sourcing in Finland has also been addressed from viewpoints such as health data ecosystems, consent practices, [populations as brands](#) and [blood donors as bio-bank participants](#).

Societal knowledge-making practices are approached from multiple perspectives. Expectations and policies regarding carbon neutrality are examined, for example, in [debates on energy transitions in Finland](#). Another approach to knowledge can be found on studies of expertise. There is research concentrating on how actors can make reasoned judgments about (or based on) expertise in which these actors are non-experts. This issue is studied in the context of [law-science interaction](#). Similarly, a recently published [dissertation](#) highlighted the constructedness and expansion of expertise in the contemporary public sphere through the case of healthy eating.

Higher education studies and interest in social impact evaluation, as well as interdisciplinary research funding are areas where we will see several publications in the coming years as there are a number of PhD projects being carried out in this field. Additionally, research is carried out for example in relation to boundary making [between organic farming and conventional agriculture, public health and the concept of risk](#), as well as cognitive sociology and machine learning (see our [blog for more information and links to individual researchers](#)).

Members of the STS Helsinki collective are also active in relation to academic organizations such as the [Finnish Society for Science and Technology Studies](#), [The European Sociological Association's Research Network 24](#) (Sociology of Science and Technology Network), and the *Science and Democracy Network* (<http://st-sprogram.org/sdn/>). The EASST journal *Science & Technology Studies* is also managed by members of the STS Helsinki community. The journal has been a long-running publication that was originally published by the *Finnish Society for Science and Technology Studies*, but has since become a joint effort with EASST, making it an important open access resource for STS scholars globally. While the S&TS does not represent STS Helsinki alone, it strengthens the STS community and adds to the vibrant conversations going on in Helsinki.

In addition, the collective hosts a working group on Science, technology and society at the annual sociological conference organized by the Westermarck Society. This stemmed from the idea to create an annual meeting point for both Finnish and international scholars to share and discuss their work with others doing STS. [In 2020 the conference will be held at Rovaniemi, and we will be hosting the working group for the 4th time.](#)

During the upcoming decade, we will continue with our STS Helsinki Seminar Series. New courses, research projects and writing retreats are being developed and planned. Most importantly, we will continue to work in strengthening the visibility of STS and building the STS Helsinki community.

Heta Tarkkala is a postdoc researcher at the University of Eastern Finland. In her research she has been interested in the reorganization of biomedical knowledge production through biobanks, and the development of personalized medicine. She currently works in a project 'Data-driven society in the making', in which attention is paid on the implementation of data-driven practices, algorithms and AI in health care and social services.



Aaro Tupasela is a sociologist with an interest in medical science and technology studies (STS). For the past 15 years he has been exploring different perspectives related to the biomedical collection and use of human tissue collections, and related health data. Most recently he has been studying everyday practices in the international movement of samples and data, as well as AI in medical decision-making.



*Salla Sariola is senior lecturer at University of Helsinki, Sociology. Her research interests concern the ethics and politics of science and technology as well as gender and sexuality. Her fieldwork has taken her to South Asia and Africa, namely to India, Sri Lanka, Kenya and Benin. She is the author of two books: *Research as Development: Clinical trials, international collaboration and bioethics in Sri Lanka* (Cornell University Press, forthcoming) and *Gender and Sexuality: Selling sex in Chennai*, (Routledge 2009, 2012). Salla is the coordinating editor of the journal *Science and Technology Studies* which is the house journal of European Association for the study of science and technology sciencetechnologystudies.org*



STS EVENTS

IT WILL BE OTHERWISE. REPORT FROM INAUGURAL AusSTS INTERDISCIPLINARY WORKSHOP, MELBOURNE 3-5 JULY, 2019

Piotr Maron

THE CONFERENCE BROUGHT TOGETHER DOCTORAL CANDIDATES AND EARLY CAREERS RESEARCHERS FROM AUSTRALIA AND NEW ZEALAND TO CREATE A PLATFORM FOR STS INFUSED DEBATES AND THINKING. ALONG THE WAY (LAW, 2009), IT VERY CLEARLY TRANSPIRED THAT AUSSTS ENDORSES VERY STRONG POLITICAL ENGAGEMENT. THERE WAS NO 'FULL STOP' AFTER THE WELL-KNOWN SLOGAN: IT COULD BE OTHERWISE. THE WORKSHOPS – ACROSS ALL THREE DAYS – DEMONSTRATED HOW IT COULD AND HOW IT WILL BE OTHERWISE.

In a span of three days of AusSTS interdisciplinary workshop in Melbourne researchers at their beginning of academic careers were invited to attend multiple keynote lectures, panel sessions, workshops, film screening and a creative challenge. The conference brought together doctoral candidates and early careers researchers from Australia and New Zealand to create a platform for STS infused debates and thinking. Consequently, the conference provided a space for fostering inter-institutional relations and collaboration ultimately shaping a strong Australasian STS community.

PROVOCATIONS

When receiving the call for papers, I remember being rather puzzled by the format of papers proposed by the organizers – five minutes presentations followed by approximately forty minutes of conversation with panellists. I was actually worried what can be delivered in just 5 minutes! However, in practice, I was pleasantly surprised that this quite innovative framework worked out very interestingly indeed. Presenters swiftly rose to the call for short, more provocative and bold papers as an alternative to analytical and descriptive presentations. Hence, all twelve sessions were fuelled by affective, lively debates and brainstorming instead of a mere reporting from the research fields. Session themes such as narrative, evidence, care, binary, code or elemental also embodied minimalistic yet dynamic flow of the event. There were two vital common threads reiterated throughout all panels: 1) the role and position of STS research in contemporary academia and beyond, 2) the ways and means of working and thinking with STS concepts. Therefore, in contrast to what Steve Fuller claims STS community summoned in Melbourne demonstrated how scientists could walk the walk and be “socially and materially bound to the outcomes of policy decisions taken on the basis of their advice”(-Fuller, 2017).

The keynote presentations have also exemplified the input of critical lens of STS into the rigid academic and social concepts. Cordelia's Fine '50 Shades of Grey Matter' keynote lecture accentuated the themes underlying the workshop: political engagement through one's own work. Fine demonstrated how social scientists can engage with lifelong critical debates in STEM: in this case the discussion



Fig. 1 Thao Phan opening speech.
Photo by Giles Campbell-Wright,
Deakin University.

addressed neuro-sexism. However, Fine has not been holding back on her critical unpacking of neuroscientific research. And even though she would not describe herself as an STS-r, there were many visible overlaps between her approach and STS feminist technoscience work.

The second keynote 'Transgenerational Politics, Solidarity and Justice-to-Come' facilitated a discussion between Prof. Jack Halberstam and Dr J.R. Latham. Issues of queer and trans visibility and politics were put in current socio-political practices in the United States and Australia. Particularly the 'Ockham's razor' moment stood out when Latham argued that neither the LGBTQIA+ community nor society in general need sophisticated policies to address trans inclusion in arenas such as sport. In his words, "Trans people don't need 300 page policy documents, we just need to let people live their gender the way they want to." Once again, we could witness a direct political intervention afforded by the AusSTS space.

PRACTICES

Similarly, all four organized workshops addressed the problems of public, political and ethical engagement of academic research. The first workshop on 'Podcasting' brought up questions and experiences about various aspects of podcasting in the academic contexts. We could exchange experiences with this form of cooperation and coproduction. More importantly, a fair amount of time had been given to – what STS appreciates most – invisible work behind the final results. So, a quick training on editing and sound engineering unearthed how much actual time of production is needed for an one hour long podcast; subsequently, we could also see how project management skills are needed in order to run a successful podcast series; last but not least, an accent has been put on self-promotion because – as it turns out – social media engagement is crucial in building up an audience.

Secondly, workshop 'Studying up, down, slow and fast' directly linked to the practices of working within various spaces and domains, from energy transition through nanomedicine to opioid crisis. The first part of the workshop was focused on unpacking what actually, in daily practices 'slow, down and fast' might entail. Additionally, the discussion on "slow science" and its practical implementation

working in energy field (Declan Kuch) and hepatitis C elimination policy (Kari Lancaster) was ignited. Divided up into three groups, each attempted to put this metaphor in use within the institutional context. The second part consisted of working on specific cases where STS framework was to be applied to inform new policies. Especially interesting was discussion on addressing the methamphetamine crisis in Australia. Employing the notion of 're-problematisation' (Bacchi, 2018; Lancaster et al., 2017)2018; Lancaster et al., 2017 participants proposed how shifting the focus from 'ice' itself to, for instance, the redefinition of categories of *addiction or drug consumption* could potentially help reducing methamphetamine intake. In short, it was clear how an STS lens, when put in practice, can change the optics of locating problems in contemporary ongoing and pressing public debates.

The Melbourne Museum Creative Challenge was set as a creative conclusion of the conference placed in Melbourne Museum where participants were introduced to the current ongoing exhibitions to later face a specific creative task. For me, the most striking in all museum's exhibitions was the newly open "Gut Feelings" exhibition. In a nutshell, it illustrates the very recent idea that our mind and microbes are intimately related and that our microbiome landscapes may heavily influence our mental health and wellbeing. The perfect timing of the exhibition is even more vivid given that Medical Museum in Copenhagen, Denmark curates "Mind the Gut" exhibition! Both are a perfect ways to disseminate the STS research outside of academia and trigger questions about medical knowledges, guts, bowels, culture, identity, mental well-being and microbes. In Melbourne, however, it is also possible

Fig. 2 Gut feelings exhibition at Melbourne Museum. Photo by Giles Campbell-Wright, Deakin University.



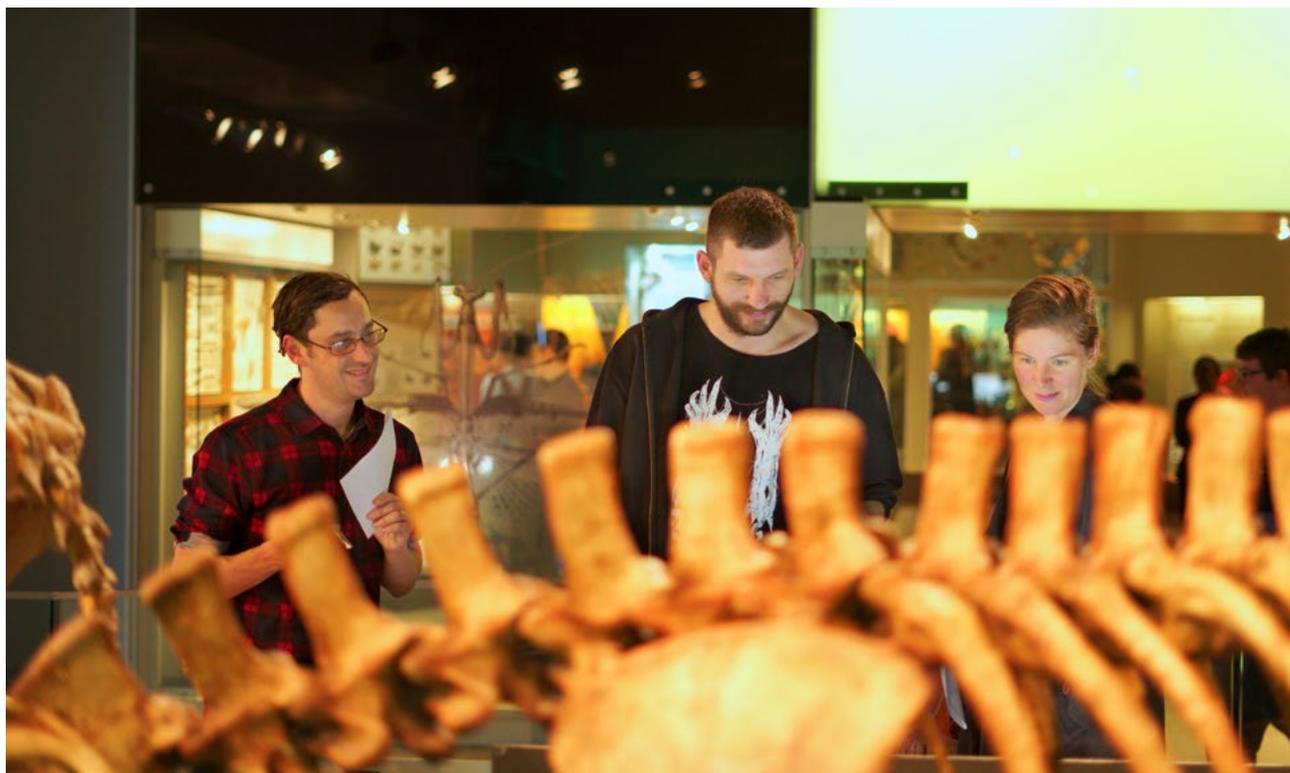


Fig. 3 Team collaboration. Photo by Giles Campbell-Wright, Deakin University.

to voluntarily participate by leaving a trace of one's saliva which would reveal microbiome landscape of it. The results of a creative challenge materialised in a provocations to re-image and re-interpret objects within the museum. Working in teams, we presented innovative and creative ideas about potential future exhibitions that invoked and elucidated thinking across disciplines and standard curator practices.

CONCLUSION

The conference brought together doctoral candidates and early careers researchers from Australia and New Zealand to create a platform for STS infused debates and thinking. However, along the way (Law, 2009), it very clearly transpired that AusSTS endorses very strong political engagement. Virtually all panel discussions, workshops and group collaboration accentuated the pressing need to switch from thinking, working, researching *on* to thinking, working, researching *with*. To make STS informed interventions locally situated and locally sensitive (Zuiderent-Jerak, 2015). Hence, given STS vast and broad interdisciplinary reach, the situatedness could penetrate academia. There was no 'full stop' after the well-known slogan: *it could be otherwise*. The workshops – across all three days – demonstrated how it could and how it will be otherwise.

Thank you to the organising team, led by Thao Phan (Deakin University) that put together this fantastic event:

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UNSW Environmental Humanities

You can find the final program of the AusSTS2019 interdisciplinary workshop [here](#). Full album with high resolution images of the event is available [here](#).

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REFLECTIONS ON THE LOCAL INSTITUTIONALIZATION OF STS

Jose A. Cañada, Jaakko Taipale

THE NORDIC STS CONFERENCE WAS HELD IN TAMPERE, FINLAND ON JUNE 12 TO 14 2019. THE EVENT MADE EVIDENT THE BROAD PRESENCE OF STS RESEARCH IN THE NORDIC COUNTRIES. A CONFERENCE THE SIZE OF NORDIC STS HELPS TO PERFORMATIVELY INSTITUTIONALIZE STS. HOWEVER, THE LEVEL OF SUCH INSTITUTIONALIZATION DIFFERS ACROSS PARTICIPATING COUNTRIES. THE SPECIAL PANEL THE LOCAL INSTITUTIONALIZATION OF STS – CHALLENGES, ADVANTAGES AND POSSIBILITIES ADDRESSED THIS TOPIC. FROM THE DISCUSSION, WE DRAW THE CONCLUSION THAT IT IS CRUCIAL FOR STS TO CONTINUE TO DEVELOP IN RHIZOMATIC WAYS IN ADDITION TO SEEKING RECOGNITION INSIDE TRADITIONAL DISCIPLINARY ACADEMIC ENVIRONMENTS, ENSURING THE RESOURCES THAT SUCH A STATUS GUARANTEES.

The Nordic STS conference took place in Tampere, Finland between the 12th and the 14th of June 2019. Judging from numbers, STS continues its steady growth in the Nordic countries. With 222 registered participants, 176 presentations, and 27 sessions (including the special panel we report here), the fourth iteration of this bi-annual STS encounter was the biggest to date. The event has become a stable meeting point for scholars based in the region. Even more remarkable, 57 of this year's 222 participants came from a total of 21 non-Nordic countries, with seven of those countries being non-European.

As the conference – organized by the Tampere University and the [Finnish Society for Science and Technology Studies](#) - drew close, we started to reflect on the performative power of such an event in terms of the institutionalization of STS. From our own little corner in the University of Helsinki, we were aware that the level of such institutionalization differs across the participating countries, and even more in each of the universities and institutes that host each participant. While some participants are in established STS departments (or at least very STS-oriented departments), some find more challenges to achieve continuity, access resources, and give visibility to STS scholarship in their institutions. These concerns connect clearly with similar discussions such as those reported earlier this year in *EASST Review* (Mewes, 2019). In this context, we wanted to take the chance offered by the event to know more about differing experiences across the Nordic Countries.

The session *The Local institutionalization of STS – Challenges, advantages and possibilities* was organised by the research collective STS Helsinki. There were four panellists participating: Mianna Meskus, (New Social Research programme, Tampere University); Oili-Helena Ylijoki, (TaSTI, Tampere University); Karoliina Snell, (HCAS, University of Helsinki); and Andreas Birnbak, (TANT-Lab Copenhagen, Aalborg University). The speakers started by presenting the role, manner and impact of institutionalization (or lack of it) in their own academic environments, after which the discussion was open to the audience. In the following, we summarize and reflect on the main points from the overall discussion, and conclude with some practical considerations.



Fig. 1 Opening words by Reetta Muhonen at the Nordic STS Conference. Picture by Petra Kotro

VARIABILITY IN STS ENVIRONMENTS

During the discussion it became clear that institutionalization looks very different in different settings, and not only regarding the level of institutionalization but also regarding the ways in which it has been achieved.

Tampere University's [TaSTI](#) (Tampere Centre for Knowledge, Science, Technology and Innovation Studies) was created in the 90s as a science studies unit. Over the years, the unit moved from being based in a research institute to becoming part of the Faculty of Social Sciences, while also surviving a merger with innovation studies in the early 2000s (which gave it its current acronym) and an attempted merger with higher education studies. In 2011 TaSTI started to shift towards a clear interest in politics, epistemology and technologies of everyday life, thus bringing STS to its core. Although TaSTI's institutional recognition has helped it to accrue funds, the unit still exists in the margins of the university and depends on

external funding. TaSTI is now looking to develop its teaching curriculum - which has not historically been a priority at the research centre - in cooperation with different faculties at Tampere university.

The history of STS in Helsinki starts in a similar way through HIST, an institute combining science, technology, innovation and economics in Helsinki. HIST was established from top to bottom, in a collaborative endeavour between the Finnish government and different Universities in the Helsinki metropolitan area. Interests quickly centred on distributing the received funding instead of establishing common research interests and teaching. HIST slowly faded away together with the institutional status of STS in Helsinki. In contrast, current efforts to develop STS were started and driven by junior scholars in collaboration with senior researchers, who share a will to collectively develop STS scholarship through research, public seminars, communication and teaching. The activity has crystallized in the [STS Helsinki](#) collective. However, the lack of allocated budget limits the development of the group.

The [TANT-Lab](#) in the Aalborg University, Denmark is an example of institutionalization not taking place through the creation of units but rather as a result of teaching. While STS has not had a unit by itself, it has been through the formula 'STS+discipline' that the approach has found continuity. Combining STS with technoanthropology, IT, medical anthropology, or administration studies has generated spaces for STS to spread. It was the combination of these different synergies between STS and other disciplines that led to the formation of [DASTS](#) (Danish Association for Science and Technology Studies) in 2006. An important part of DASTS has been its free membership, which has led to large and very lively community despite the lack of financial means.

Finally, the contrast was offered by researchers from Lund University, Sweden, where STS is virtually absent in institutional terms, with only a handful of people working from an STS perspective. In such a context, attending international events becomes one of the few chances to interact and discuss with other STS scholars.

STS: AN INSTITUTIONAL SPACE OR AN APPROACH?

The level or type of formal organization has an effect on the vitality of STS. The growth of the Nordic STS community is an indication that the informal ways of creating research communities that the panellists discussed are an efficient way to create possibilities and identity in the field, without formal recognition in the guise of academic positions and study programs.

In the long run, however, issues of job security might appear. If all salaried top positions are non-STS, then it is hard to get good talent to take up STS as anything but an 'approach'. As a mere approach, STS can be understood as an epiphytic entity, dependent on academic currents and good will. While this may be sufficient to a few individual careers, it does relegate STS into fringes of academia and does not provide an inspirational leadership and career narrative for junior scholars to follow. There is also an involved risk for young scholars; for promotions, disciplinary merits often count more than interdisciplinary merits. Universities work with traditional disciplinary institutional boundaries, and genuinely interdisciplinary units seem to be an exception, and as such always subject to scrutiny.

As has been discussed, informal networks or collectives, such as STS Helsinki or the Danish example that centres on teaching, can be highly successful initiatives for mobilizing and recruiting new scholars to STS. Such quasi-rhizomatic networking and creative buzz is necessary for (and also a sign of) a vibrant field.



The question to think about is whether this is enough for continued success of STS in Nordic countries and beyond, or should STS strive to create institutionally stable spaces beyond doctoral programmes and specialised research institutes?

Fig. 2 From left to right, Mianna Meskus, Karoliina Snell, Oili-Helena Ylijoki, and Andreas Birkbak. Picture by Aaro Tupasela.

STRATEGIES FOR THE FUTURE OF STS

Professor Sheila Jasanoff (also a keynote at the Nordic STS conference) conveniently prequelled our panel with her talk in Helsinki on Tuesday 11th of June. Prof Jasanoff discussed the early days of STS and how the field was established, and highlighted the publication of the Handbook of Science and Technology Studies (Jasanoff et al., 1994) and the popularization of the 4S meetings around the year 2000 as keystones of the process. Jasanoff advocated building bridges and partnerships to expand the influence and reputation of STS as a relevant field in itself. This call was echoed in the panel discussions. Reaching out (both as individual researchers and as STS communities) was explicated as a clear way forward for STS, especially as traditional institutionalization paths do not seem to sit comfortably with the epiphytic character of STS that we mentioned above.

One discussed area of interest in terms of attaining societal relevance was policy spaces. One of the discussants stated that if STS does not advice on scientific knowledge and its uses in society, someone else surely will. There was a suggestion that national STS associations or subject specific STS societies could take the lead on this for example in the form of inviting politicians to discussions on topical subjects. This would at best create a positive loop between politicians and STS scholars, with the attribution of 'science experts' rooting into the STS community.

Second, teaching is a key tool for STS to get a foothold in the disciplinary environments of universities. Especially if developed by junior scholars, teaching elevates scholarship and generates work experience that is crucial to accessing better salaried positions. At the same time, teaching and curriculums help to promote STS among undergraduate students, whose successful recruitment into the field is pivotal to both continuity and intellectual vitality of STS communities. Although developing new teaching in existing departments is not easy, there are opportunities to develop STS teaching during programme creation or renovation processes. Furthermore, senior scholars should be pushing for more cross-university teaching programs that can properly represent the interdisciplinary character of STS.

Finally, not only reaching out is key for STS to achieve continuity, but also reaching inside the STS community itself. From a more micro perspective, activities such as reading groups, writing retreats, or STS walks were mentioned as ways to develop STS communities, especially in the absence of institutional infrastructures and funding. These activities help to identify shared interests and a common theoretical framework that bestows STS identity to the group or community. From a more macro perspective, it is important for STS units, departments or communities to be in touch with each other. One of the panel discussants suggested more regular interaction between national STS organizations in the Nordic Countries that goes beyond the organization of a biannual conference. This would help to strengthen STS networks across the region while giving visibility to Nordic STS scholarship among international associations such as EASST and 4S.

Our discussion reveals a heterogeneous understanding of what the institutionalization of STS entails. While some talk about outward validation, job security, and access to funding, some make references to the social and intellectual aspects of STS, with a clear interest in the development and growth of the discipline. In our understanding, these different dimensions point towards the objectives of viability and continuity. While there are multiple strategies to achieve these objectives, we infer from the discussions that all of them rely on constant efforts to develop the STS community and the enactment of practical actions for and from STS. With this in mind, we think that it is crucial for STS to continue to develop in rhizomatic ways in addition to seeking recognition inside traditional disciplinary academic environments, ensuring the resources that such a status guarantees.

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UNRAVELING THE LANDSCAPE: A 360° WORKSHOP

António Baía Reis, Michelle Kasprzak

IN MAY 2019, SCHOLARS ANTÓNIO BAÍA REIS AND MICHELLE KASPRZAK CONVENED IN CÂMARA DE LOBOS, A PICTURESQUE TOWN ON MADEIRA ISLAND AT THE EDGE OF PORTUGAL, TO ORGANIZE AND CONDUCT A 360° VIDEO WORKSHOP. THIS WORKSHOP TRAINED PARTICIPANTS IN ESSENTIAL SKILLS FOR PRODUCING VIRTUAL REALITY 360° VIDEO. THE WORKSHOP TOOK A HANDS-ON APPROACH, AND WAS DESIGNED TO EXPLORE THE MAIN THEORIES AND CONCEPTS AROUND THIS NOVEL STORYTELLING PARADIGM AND APPLY THEM CREATIVELY IN THE PRODUCTION OF A SHORT VIDEO. BY BRINGING TOGETHER UNIVERSITY ART STUDENTS FROM THE UNIVERSITY OF MADEIRA AND YOUTH FROM CÂMARA DE LOBOS AS PARTICIPANTS, THE GOAL OF THIS WORKSHOP WAS TO PROVIDE THEM WITH THE OPPORTUNITY TO UNDERSTAND THE POTENTIAL OF EMERGING TECHNOLOGIES AND HOW TO USE THEM IN A CREATIVE WAY TO TELL STORIES YET UNTOLD. THE RESULT WAS AN INSIGHTFUL LOOK INTO THE YOUNG, CREATIVE MINDS OF A MOST UNUSUAL GATHERING OF PEOPLE, AND A SHORT 360° VIDEO ABOUT WINSTON CHURCHILLMANIA IN CÂMARA DE LOBOS.

The idea behind this workshop was borne out of a previous collaboration between António Baía Reis and Michelle Kasprzak in 2018. At that time, and within the same natural and research setting of Câmara de Lobos, the two authors were brought together by the desire to explore 360° video storytelling and ended up producing a short documentary about the life, achievements, and misadventures of a Madeiran master boat builder. Inspired by this previous experience, they sought to outline a project where they would teach and guide young people to critically and creatively reflect about the world around them using the same emerging storytelling techniques. With this in mind, the workshop gathered a diverse group of people consisting of four finalist students from the bachelor's degree in Visual Arts of the University of Madeira, a young man from Câmara de Lobos, and an Italian Ph.D. student based on the island.

Drawing from our field notes and by observing this group's specific dynamics and interactions, one might clearly split this group into three different mindsets, the first consisting of the four university art students. These four students were very much in harmony with each other throughout the entire workshop, especially during the brainstorming that led to outlining the production of the short video. Their approach was evidently aligned with a certain esthetic complexity and abstract way of thinking and approaching problems, quite distinctive of students that are exposed to art history, theories, and practices. They always seemed to try to find subliminal ways of conveying an idea, through the subtleties that artistic expression might encompass.

Fig. 1 Art students experiencing virtual reality. Courtesy of Michelle Kasprzak



On the flipside, the young man from Câmara de Lobos showed a different mindset, conveyed by a pragmatic way of thinking but overall a mindset that proved to be quite effective in terms of accomplishing a smooth group workflow. His insights and ideas were strong and informative. When facing a creative challenge, he showed a consistent ability to go straight to the point. Efficient creativity might be a good category to define this young man's approach.

Fig. 2 Telmo (young man from Câmara de Lobos) and Mela (Italian Ph.D. student) during the brainstorming. Courtesy of Michelle Kasprzak

Finally, the Ph.D. student acted as a typical academic, i.e., balancing between free thinking and scientific analyses of everything that was happening around her, a sort of a limbo between herself as a participant and outsider making detached scientific observations. The idea that diversity triggers creative and innovative outcomes in groups is broadly accepted (Bantel & Jackson, 1989; Austin, 1997).

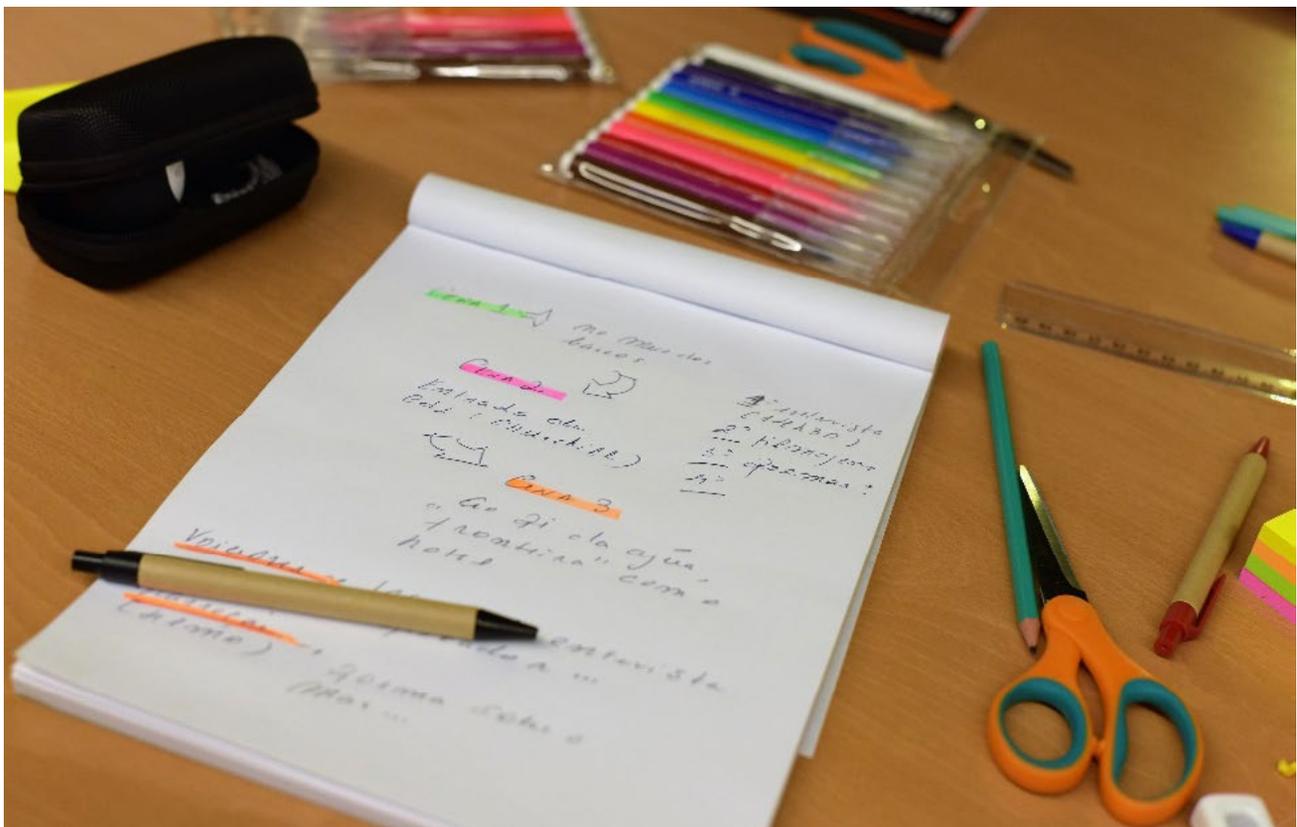




Fig. 3: Braistorming and defining the storyline for the 360° video production Courtesy of Michelle Kasprzak

Nevertheless, having different backgrounds and perspectives can create some difficulties. It wasn't the case with this work group. The combination of the diverse abovementioned approaches clearly contributed to accomplish the goal of this workshop, which was the creation of a collaborative short 360° video.

The workshop took place in the Madeiran Press Museum - in the midst of old press machines and with the ghost of Gutenberg - a quite evocative setting to be thinking and reflecting about storytelling. On the first day, and after quite a thorough team building exercise, the participants were introduced to the most relevant concepts, theories, and practices around 360° video storytelling. This theoretical outline was informed mostly by key studies on immersive journalism (Baía Reis et al., 2018; Jones, 2017; Laws, 2017), and it was focused on concepts like *immersion*, *presence*, and *emotion* in relation to virtual reality technologies to set the basis for understanding how to use 360° storytelling to tell stories yet untold. This was followed by a showcase of a selection of 360° videos using a virtual reality headset to expose the participants first-hand to this emergent practice. Then, we proposed that the group come up with a story yet untold that they wanted to tell about their community that would make sense in virtual reality storytelling. The group decided to tell a story about the unexpected influence of Winston Churchill in Madeira. The third and final days were devoted to shooting, editing, and presenting the short video.

The brainstorming for selecting the story and the video production processes were clearly the most relevant moments for us to examine, e.g., creativity as both a process and an outcome (Miliken et al., 2003) and how that manifested through the diverse perspectives within the group. During the brainstorming, when everyone was asked about what story should be told, an immediate and clear idea about doing something on Winston Churchill came from the young man from Câmara de Lobos. Throughout the brainstorming and video production, the inputs of this young man were clearly the ones that established the focus to effectively create a successful collective outcome. One might say that he unconsciously guided his fellow participants and their divergent ideas into a convergent structured attitude. In fact, creative processes require both divergent and convergent thinking for the sustained development of creative outcomes by work groups (Miliken et al., 2003).

Fig. 4: Shooting the 360° video in the bay of Câmara de Lobos. Courtesy of Michelle Kasprzak

Furthermore, by assuming a relevant role in the shooting and editing processes, he showed an ability to focus on his tasks and to make quick, simple, and practical decisions. This approach was complemented by a certain artistic *finesse* that arose from the art students, who tried to think of original ways for conveying the story, and a sort of a mediating approach by the Ph.D. student who throughout the entire process seemed to be mediating ideas by deconstructing them to her fellow participants so that everyone could see its advantages and disadvantages, thus making informed and coherent decisions. Overall, one might argue that the combination of these diverse perspectives led to a fluent, flexible and original creative process. Fluency, flexibility, and originality of thought were, therefore, defining qualities of the final creative outcome (Miliken et al., 2003), the short video about Winston Churchill and his relation to Madeira.

Creative processes and analysis apart, some attention should be given to this most unlikely combination: Winston Churchill and Madeira island. At the entrance of Câmara de Lobos there is a viewpoint which owes its name to the British prime minister Winston Churchill, who painted a seascape depicting the bay in this location. The Winston Churchill viewpoint, located at the entrance of the city of Câmara de Lobos, allows you to enjoy a magnificent panoramic view of the dry dock, the bay, and the town. Built in 1963, it was known at the time as the “Espírito



Santo" (Holy Spirit) viewpoint. Later the name was changed, as a way for the picturesque village of Câmara de Lobos to remember and pay tribute to Winston Churchill, since in this location the British prime minister painted the abovementioned seascape depicting the bay. But this is not the only Churchill reference you find in this fishermen's town. Churchill is everywhere, in restaurants, in guided tours, souvenirs shops, a true "Churchillmania". With this mind, the short video produced within this workshop explores this phenomenon and counter reacts to it by telling the "true stories" about this town's old traditions and culture, so deeply related to the lives of fishermen.



Fig. 5: The "Winston Churchill" viewpoint in Câmara de Lobos. The sign says "Winston Churchill painted here in 1950." Courtesy of Michelle Kasprzak



Fig. 6: The bay of Câmara de Lobos.
Courtesy of Michelle Kasprzak

In short, we engaged a diverse group of people in understanding the potential of emerging technologies and how to use them in a creative way to tell stories yet untold in a small neighborhood at the edge of Europe; we promoted an open event where the results were discussed, the short 360° video was showcased, and all the participants had the opportunity to share their experience with the wider community; Finally, we had the chance to academically reflect about this experience by analyzing the various dynamics between the participants, the setting, and the creative processes involved. Having the bay of Câmara de Lobos and the Atlantic as our background, this workshop succeeded in achieving its proposed goals by combining three classical features of science and technology studies: scientific knowledge, technology, and society.

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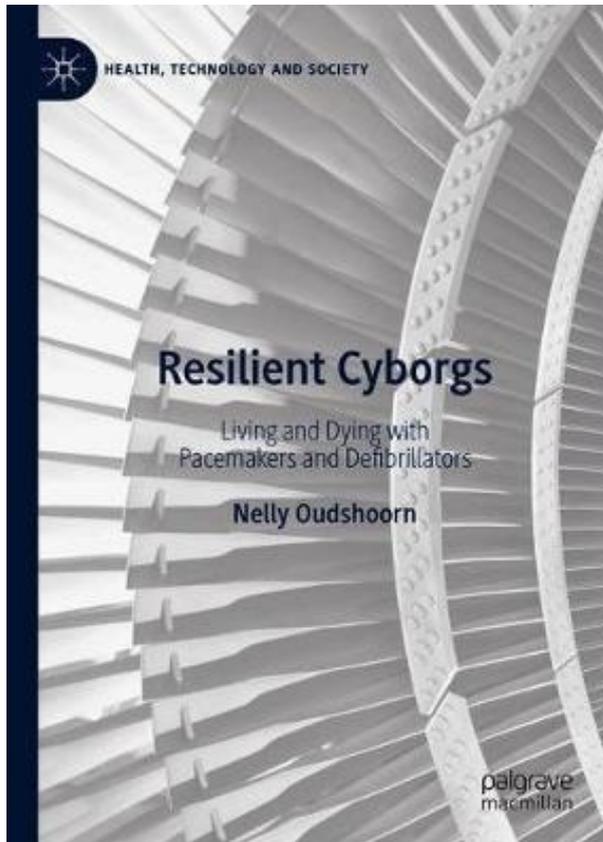
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NEWS

NELLY OUDSHOORN (2020). RESILIENT CYBORGS. LIVING AND DYING WITH PACEMAKERS AND DEFIBRILLATORS.

Palgrave Macmillan.



This book examines how pacemakers and defibrillators (ICD) participate in transforming life and death in high-tech societies. These implants represent an important case for STS research because they challenge a longstanding tradition of theorizing human-technology relations. Many theoretical approaches conceptualize the interactions between humans and technologies merely as finite and limited, temporal events and focus on devices that are more or less under the control of humans. However, technologies implanted in bodies often involve continuous interactions that may last a whole life time and their design does not delicate agency to its 'users'. Because of the persistent and widespread presence of technologies implanted in bodies, understanding the agency, vulnerabilities and resilience of people having these devices has become an urgent concern. Based on a detailed field work of how people live and die with pacemakers and defibrillators, the book describes how keeping hybrid bodies alive requires the active involvement of 'wired heart cyborgs', their close relatives, technicians, nurses and cardiologists, governance and medical infrastructures, and the devices themselves. Importantly, building resilience also includes the phase of dying and the reuse of pacemakers removed from deceased bodies. The concluding chapter develops a new sociology of what it takes to become a resilient cyborg. Inspired by the work of Donna Haraway on cyborgs and companion species, the book argues that implanted technologies can best be considered as body-companion technologies.

This concept invites us to approach technologies inside bodies as devices that act as life-long companions requiring extensive work to sustain the multiple, often mutual, relationships between humans and technologies. First of all, the interactions and interdependencies between cyborgs and body companion technologies involve a mutual guarding. Pacemakers and defibrillators have been introduced to keep watch over possibly life-threatening heart-rhythm disturbances to ensure more regular heartbeats. Conversely, people living with these technologies have to watch over the proper functioning of their implants by ensuring that external physical objects, digital devices, (grand)children or intimate partners don't disrupt their devices. Guarding over their implants to protect them from external harm involves extensive anticipation and disentanglement work in which wired heart cyborgs develop different techniques to build resilience. A second interaction that emerges in this book concerns a reciprocal process of disciplining. During the first months after the implantation, internal heart devices must be disciplined by tuning and re-adjusting their agencies to the agencies of the heart. Conversely, internal heart devices try to discipline cyborgs as well. Despite this guarding and disciplining, body companion technologies may run wild and even hurt you, as exemplified by fractured leads and inappropriate shocks, even during dying. A third interaction and interdependency between body-companion technologies and wired heart cyborgs therefore concerns domesticating, which, in contrast to guarding and disciplining, only involves work by wired heart cyborgs and technicians. Other important heuristic tools developed in the book include conceptualizing the active engagement of cyborgs in building resilience as work; accounting for their expertise by including sensory experiences and resilience techniques; following the whole life cycle of hybrid bodies, including dying and death; and a sensitivity to difference.

INVESTIGATING CRYOPRESERVATION PRACTICES IN CONTEMPORARY SOCIETIES: A NEW ERC PROJECT

STS, FEMINIST AND SOCIOLOGICAL WORKS ON POLITICAL AND SOCIAL DIMENSIONS OF THE LIFE SCIENCES AND BIOMEDICAL PRACTICES HAVE SO FAR FOCUSED ON GENETIC AND REPRODUCTIVE TECHNOLOGIES. HERE WE PRESENT A NEW ERC PROJECT AIMED AT INVESTIGATING CRYOPRESERVATION PRACTICES IN CONTEMPORARY SOCIETIES. OVER THE NEXT FIVE YEARS, THE PROJECT TEAM WILL STUDY THEM THROUGH THREE EMPIRICAL CASE STUDIES – CORD BLOOD BANKING, TISSUE COLLECTIONS OF ENDANGERED SPECIES AND OOCYTE CRYOPRESERVATION. IN THIS ARTICLE, WE PRESENT CENTRAL IDEAS AND THEORETICAL PREMISES AND LINK THEM TO CURRENT DEBATES WITHIN STS.

In the past twenty years, STS has produced important insights into bioscientific and biomedical innovations and the epistemological and structural reconfigurations they brought about in the study of life in the second half of the 20th century. The analysis of the impact of molecular biology and biotechnologies such as organ transplantation, cloning, tissue engineering and assisted reproduction has attracted substantial interest among scholars. However, cryopreservation practices, which constitute the material basis for many of these technologies, have hardly been addressed (for notable exceptions see Parry 2004; Landecker 2007; Radin 2017).

CRYOSOCIETIES

Over the next five years, the research project »Suspended Life: Exploring Cryopreservation Practices in Contemporary Societies« (CRYOSOCIETIES) will investigate the collection, storage and usage of human and non-human organic material by technologies of cooling and freezing, what are known as cryotechnologies.¹ The project is funded by the European Research Council (ERC) within the Advanced Grant scheme² and is based at Goethe University Frankfurt. The project team consists of Thomas Lemke (PI), Veit Braun, Sara Lafuente-Funes and Ruzana Liburkina.

CRYOSOCIETIES will investigate empirically the dynamics and complexities of cryopreservation practices, which until now have hardly been recognised in their profound implications for the government of life in contemporary societies. Employing a set of qualitative research methodologies, the team will explore distinctive fields of investigation and sites of cryobanking. The three case studies (each of them led by one of the postdoctoral researchers) cover the fields of regenerative medicine, reproductive technologies, and conservation biology. They include human as well as non-human cryobanks and medical as well as non-medical applications, scientifically and medically sound, but also speculative or utopian practices of cryopreservation:

1 The word »cryos« derives from Ancient Greek (κρύος krýos) and means »ice« or »cold«.

2 Grant Agreement number: 788196. The project team consists of the PI and three postdocs (Veit Braun, Sara Lafuente, Ruzana Liburkina) who are each responsible for one of the three subprojects described below (for further information see the project site <http://cryosocieties.eu>).

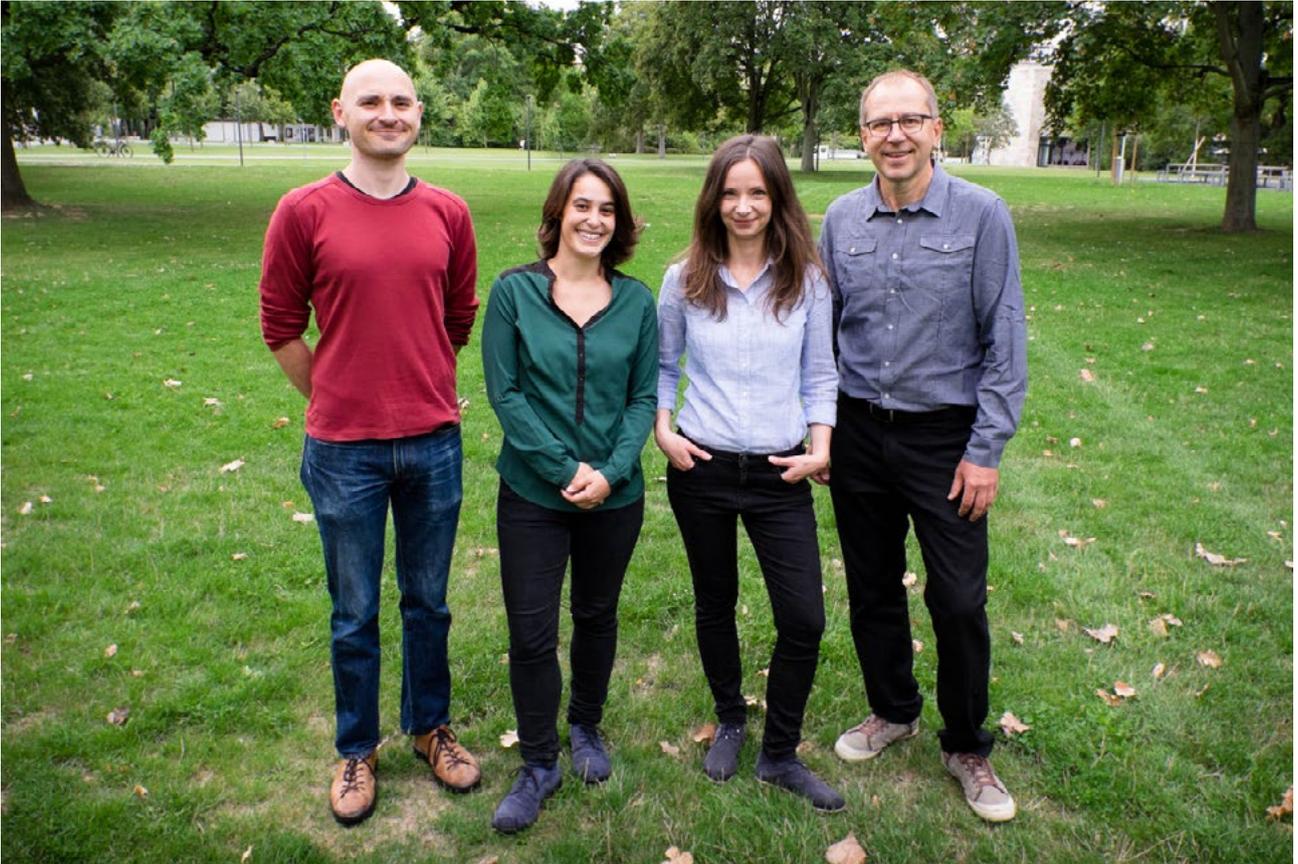


Fig. 1 Thomas Lemke (PI), Veit Braun, Sara Lafuente-Funes and Ruzana Liburkina are in the project team.

- cord blood storage to prepare for possible regenerative therapies in the future (site of fieldwork: Germany / Ruzana Liburkina)
- oocyte freezing to extend fertility and rearrange reproductive futures (site of fieldwork: Spain / Sara Lafuente-Funes)
- the cryopreservation of endangered or extinct species with the prospect of “bringing them back to life” by employing reproductive and genetic technologies (site of fieldwork: UK / Veit Braun)

SUSPENDED LIFE

CRYOSOCIETIES is based on the observation that cryopreservation has opened up the perspective of modifying and modulating temporal pathways and developmental cycles (Landecker 2007). The ability to arrest biological processes in order to reanimate them at some point in the future has profoundly transformed the terms of life. Cryobiology establishes a new regime of time that replaces linear by plastic temporalities, altering our understanding and experience of life (and death). Given the technological prospect of stopping and resetting cellular activities, it defines a liminal state in which a biological substance is neither fully alive nor dead (Radin 2013; Hoeyer 2017). Ultimately, cryopreservation practices bring into existence a new »form of life« (Helmreich, Roosth 2010) characterised by a permanent deferral of death: »suspended life« (Le Conte 1901). They allow vital processes to be kept in a state of »latency« (Radin 2013) for future revival and generate »a sense of moral, social, and political suspense« (Hoeyer 2017: 211), producing conceptual ambiguity and eroding existing categories of personhood, kinship and property.

Frozen life is also characterised by a double temporal suspension. Firstly, it refers to the prospect of interrupting and restarting biological processes, bringing the growth and death of cells and tissues to a temporary halt – a »pause« – in order to allow storage for an indefinite period of time (at least in principle). Cryopreservation puts bodies – or rather bits of bodies – »on hold«. The technological force at work does not draw from the »the plasticity of living matter« (Landecker 2007: 13) by transforming cells and the body; somewhat paradoxically, cryobiological plasticity rather means that temporal change is blocked and put »on ice«, remaining inert and unmoving. Cryopreservation alters the meaning of biology by halting »natural cycles«, by interrupting the »normal« course of development and decay. Secondly, »suspended life« is an integral part of a more comprehensive »regime of anticipation« (Adams, Murphy, Clarke 2009: 250) that guides contemporary technoscientific and biomedical practices. This regime involves a temporal orientation that conceives of the future as open and contingent but at the same time as malleable and dependent on actions in the present. These modes of anticipation are informed by rationalities of prevention and preparedness, and are characterised by entanglements of fear and hope linking epistemic orientations to moral imperatives. Within this anticipatory logic, the future is shaped and formed in the present by the cryopreservation of organic material credited with a huge potential for knowledge production and hitherto unknown technological applications. Thus, »suspended life« represents a horizon of possibilities and a form of »promissory capital« (Thompson 2005) that materialises in the present to sustain, improve, foster or control processes of life.

TOWARDS A NEW REGIME OF CRYOPOLITICS?

Contemporary studies in STS, anthropology and sociology on the political and social impact of the life sciences and biomedical practices draw on the concept of biopolitics introduced by Michel Foucault and widely discussed in the contemporary social sciences and humanities (Foucault 2003). However, the analytic focus has been on "molecular biopolitics" (Rose 2007: 11), while cryobiological and cryopreservation practices have only occasionally been taken into account.

To capture the profound socio-material changes introduced by cryotechnological practices, some scholars have recently proposed the term "cryopolitics" as a way of correcting or complementing the analytic focus on processes of molecularisation in contemporary studies in STS, anthropology and sociology. While the notion originates in debates on the geostrategic significance of the Arctic region in the light of global warming and the dwindling of natural resources in other climatic areas (Bravo and Rees 2006), its current usage addresses the complex strategies of generating, regulating and processing "suspended life". While "biopower" is characterised by technologies that foster life or let die, as opposed to sovereignty that takes life or lets live (Foucault 2003: 241), cryopolitics operates by the principle making live and not letting die (Friedrich and Höhne 2014; Kowal and Radin 2015). Thus, cryopolitics is characterised by arresting processes of decay and dying, enabling the establishment of a form of life beyond life (as we know it) by exposing living matter to a new onto-political regime, rendering it neither fully alive nor dead.

CRYOSOCIETIES seeks to explore and advance this theoretical proposition further. It conceives of cryopreserved organic material as "suspended life" which points to the multifold intersections of contemporary biopolitics with forms of "thanatopolitics" or "necropolitics" (Agamben 1998; Mbembe 2003; Esposito 2008). However, it is important to contrast "suspended life" with Agamben's notion of "bare life". The latter designates a human being who can be killed with impunity after being banned from the politico-legal community and reduced to the status of mere physical existence (Agamben 1998). "Suspended life" radicalises the "nakedness"

of life forms, addressing them as disembodied and decontextualised organic matter, dissociated from the network of biological, ecological and social interactions it originated from. But “suspended life” also differs from “bare life” in that it defines a form of life that is not exposed to death at all; rather, it is not allowed to die, being kept in limbo between life and death. Therefore, death no longer signifies the ultimate limit of biopolitical interventions and strategies, but is itself rendered plastic by cryobiological practices to preserve, promote and extend life.

FINAL REMARKS

CRYOSOCIETIES seeks to achieve two central objectives. First, the project aims to advance the academic debate on “suspended life”. It will draw on and further promote insights from STS, sociology, anthropology and environmental humanities to grasp the multifold dimensions of artificial cold. CRYOSOCIETIES will provide practice-based knowledge about the ways in which “suspended life” is assembled, mobilised and negotiated in distinctive sites and settings. An empirical examination of how “cryogenic life” is shaped as a set of relations between the biological, the social and the technical, it carves out novel routes for future research. By including different fields and materials of cryobanking, the project will offer a comprehensive account that opens up new empirical venues for studying and interrogating the complexity of “suspended life” in science and society.

Secondly, CRYOSOCIETIES seeks to foster public engagement with and within the field of cryopreservation and cryobanking. It tackles a series of pressing questions of scientific and social relevance. With the increasing importance of the life sciences, biological material has become a matter of growing concern, raising issues of privacy, data protection and possible misuse, but also the prospect of patenting and commercialisation. In addition to sensitising the cryobiological community to the complexities of the social and cultural issues at stake, the project also aims to make a substantial contribution to the public discourse on cryopreservation and cryobanking. We hope it will develop a new conceptual vocabulary grounded in comprehensive empirical research to address the vital question of how freezing technologies shape and possibly transform both biological processes and social practices as well as notions of health, fertility and conservation.

For more information please visit the project site: www.cryosocieties.eu
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