Nordic Science and Technology Studies Conference 2021

STS AND THE FUTURE AS A MATTER OF COLLECTIVE CONCERN

Copenhagen Business School, May 20-21, 2021

Pre-conference, May 19, 2021

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Conference Theme: STS and the Future as a Matter of Collective Concern

Rising sea levels, mass extinctions, global displacements, climate catastrophe, everyday devices that conduct mass-surveillance, digitalization and automation of warfare, nationalistic politicians in important offices, and now, on top of all, the global COVID-19 pandemic. We live in times when the future appears deeply concerning. In this context, we dedicate the NOSTS Conference 2021 to a conversation about STS and the future as a matter of collective concern.

We especially welcome contributions relating to the following topics:

- STS and the socio-technical construction of the future. We invite studies that explore how the future (and "time" more generally) is produced, experienced, and lived today. For example, studies of multiple ways of constructing the future, analysis of temporal narratives in science and science fiction, conceptual reflections about time and the Anthropocene, and case studies of temporality in different socio-technical settings.

- STS and matters of concern. For several decades, STS research has paid attention to many of the issues that are at the core of today's concern for the future. In line with this, we welcome empirical studies that explore socio-technical attempts to deal with, for example, climate catastrophe, automation, and algorithmic warfare.

- The future of STS. We welcome papers that engage with the expanding repertoires and specific instruments that STS scholars use to reflect on and conceptualize their own forms of engagement in the study of collective concerns. For example, comparisons and discussions concerning as the notion of "matters of concern" itself, the different personae adopted by the STS scholar (for example, the figure of the "idiot") as well as methodological reflections on "intervention," "collaboration," "dialogical democracy," and "responsible innovation."

- STS in the time of a pandemic. We welcome papers that respond to the current context of a pandemic by considering, for instance, how COVID-19 challenges our understanding of how futures are constructed, our knowledge about socio-technical attempts to deal with catastrophic situations, and the position of the STS scholar vis-à-vis crucial collective concerns.

Note: The conference theme was originally planned for the Danish Association of Science and Technology Studies (DASTS) Conference 2020 that was postponed due to COVID-19. Since the theme suddenly became even more relevant, we decided to use it for the Nordic Science and Technology Studies Conference 2021. The organizers' are very grateful that all the speakers originally planned for the DASTS Conference 2020 accepted to participate in the NOSTS Conference 2021.

Keynote Speakers

Maria Puig de la Bellacasa is Associate Professor at the Centre for Interdisciplinary Methodologies, University of Warwick. Puig de la Bellacasa works at the crossing of science and technology studies, feminist theory and the environmental humanities. Her most recent book *Matters of Care. Speculative Ethics in More than Human Worlds* (Minnesota University Press, 2017) attempts to connect a feminist materialist tradition of critical thinking on care with debates on more than human ontologies and ecological practices. Puig de la Bellacasa is currently researching the ongoing formations of novel ecological cultures, looking at how connections between scientific knowing, social and community movements, and art interventions are contributing to transformative ethics, politics and justice in troubled naturecultural worlds. She also looks for interstitial spaces of knowing and doing that disrupt seemingly hegemonic technoscientific regimes – in particular everyday forms of ecological care in minoritarian eco-social movements such as permaculture and material spiritualities.

Annelise Riles is Northwestern University's Associate Provost for Global Affairs, the Executive Director of the Roberta Buffett Institute for Global Affairs, and a professor of law and anthropology. Her scholarship spans a wide range of substantive areas including human rights, managing and accommodating cultural differences, and the regulation of the global financial markets. Dr. Riles has conducted legal and anthropological research in China, Japan and the Pacific and speaks Chinese, Japanese, French, and Fijian. She is also the founder and director of Meridian-180, a multilingual forum for transformative leadership. She received an AB from Princeton University's School of Public and International Affairs, a MSc in Social Anthropology from the London School of Economics, a JD from Harvard Law School, and a PhD in Social Anthropology from University of Cambridge.

Plenary: Annelise Riles

Thursday May 20 at 16.00-17.30

The Future-Oriented University

The theme of this conference--the future as a matter of collective concern--beckons us to consider how we might seize the opportunity of this historical juncture to reorient ourselves and our knowledge to the future. This demands engaging the institutional form in which so much of our knowledge is produced and shared--the university. Around the world, the socio-technical patterns, practices and pathways through which we create and transmit knowledge have been upended by lockdowns, travel bans and digital technologies, creating heretofore unthinkable challenges but also opportunities for disruption and reimagination. Meanwhile, beyond the academy, the COVID-19 crisis has produced both heroic visions of scientists on the frontline of vaccine discoveries, and new critiques from politicians and social movements on both sides of the political spectrum for what they view as the arrogance and aloofness of the academic ivory towers.

In the commonsense and functionalist understanding, universities are relations of thinkers and learners, organized within specific institutional structures that are meant to engender the creation and transmission of knowledge. But universities are hardly unique in this role--on the contrary, universities now face competition from the private sector, from governments, and from collectives and civil society organizations of various kinds all of which lay claim to a new alt-university space. This desire for the alt-university speaks powerfully, also, to an implicit and unwritten fantasy that emanates so much of the anthropology of knowledge, science and technology studies and cognate fields, of going outside, or beyond the universities, to other worlds of knowledge making and relationality.

In this lecture, I will critically analyze one attempt to create a prototype for an alt-university to reorient knowledge towards the future, in the aftermath of another crisis of expertise, the nuclear crisis at Fukushima of 2011. Through this example of an attempt to imagine alternative relations to the institutional context of the university that might create prospective knowledge--preparedness--I consider what kinds of relations, institutional and conceptual, might undergird the ambition of this conference, of reorienting our institutional lives towards the future as a matter of collective concern.

One of the distinguishing and hopeful features of the idea of the university is its temporal orientation towards the long view of the future of knowledge creation and its impact in the world. And yet so often we experience the institutional structures of the university as anything but hopeful--as retrospective and cynical, as fueled by short-term definitions of impact and value, as sites of real-time surveillance rather than the imagination of future possibilities. Building on recent debates in the anthropology of knowledge and the theory of the university, I argue that the future of the university demands short-circuiting the functionalist dyad of relations that produce knowledge, or rather obviating this dyad with a seemingly otherworldly, but always latent third--Wisdom.

Plenary: Maria Puig de la Bellacasa

Friday May 21 at 11.30-13.00

Enabling breakdown. Reading futures in the soil

Drawing from research on contemporary human-soil relations across the soil sciences, soil activist education and soil arts, this talk engages with a more-than-human ethos that acknowledges the vital requirement of breakdown for life on Earth. It explores the implications of embracing and enabling breakdown for how Science and Technology Studies may approach technoscientific cultures of futurity, and their embeddedness in the privilege of endurance through productivity and innovation.

Life on Earth depends as much on the production, build-up and endurance of matter as on its breakdown and recirculation. The breakdown of compounded matter enables the re-circulation of elemental substances and energy, and is critical to the continuous biogeochemical choreographies in which a myriad of organisms participate. Inseparable from death and decay these biogeochemical relations that took eons to be established have been deeply disrupted by an excess of manufactured compounds since the industrial and agricultural revolutions. Today ecological cycles on Earth are struggling with a crisis of breakdown processes, choking from an excess of manufactured endurance.

From the perspective of soils and other struggling more than human mediums today, enabling breakdown is not neglect, it is an act of care. Thinking with soils as an elemental medium of biogeochemical sharing and circulation of matter may allow naturecultures grounded on the resistance to breakdown to learn other possible ways of living with non-humans, and confront the devastating consequences of persistent timescapes that reduce Life to productivity and endurance.

Futures Panel

Friday May 21 at 16.00-17.30

In addition to the two keynote speakers, our Futures Panel will discuss the question "Does STS (still) mean business?" picking up on the question that was debated in the journal *Organization* in 2009 but restating it in the context of the conference theme. The panel will be chaired by José Ossandón, Associate Professor in Organization of Markets, Department of Organization, Copenhagen Business School and our Futures Panel speakers are:

- **Joan Fujimura**, Martindale-Bascom Professor, Department of Sociology, University of Wisconsin, Madison and President of the Society for the Social Studies of Science 2019-2021.
- **Susi Geiger**, Professor of Marketing and Market Studies at University College Dublin College of Business.
- **Alan Irwin**, Professor of Risk and Organization, Department of Organization, Copenhagen Business School.
- **Lise Justesen**, Associate Professor, Department of Organization, Copenhagen Business School.
- **Daniel Neyland**, Professor in Sociology, Department of Sociology, Goldsmiths, University of London.

Morning Coffee & Reflections

Friday May 21 at 9.00-9.30

Day 2 of the conference begins with a morning coffee & reflections session. What have been the highlights so far – and what can we look forward to? What is the relationship between 'Nordic' STS and the wider settings and contexts of STS world-wide? To get the reflections started, we have invited Professor Maja Horst (DTU), incoming president of EASST, and Professor Alan Irwin (CBS), a veteran STS scholar, to share their thoughts. Jane Bjørn Vedel will host the conversation.

Information on session format to chairs, presenters, and participants

The Subtheme parallel sessions will be 90 minutes and contain three to four papers. Presenters are asked to prepare ***short presentations of 12-15 minutes*** with slides that can be shared with the participants in the session by using the "Share Screen" function in Zoom.

Structure of parallel sessions

We suggest the following structure of sessions

- Session introduction: The chair briefly introduces the session theme and the presenters (names and affiliations)
- Paper presentations: The presenters give their presentations consecutively without a discussion following each paper. The participants can ask clarifying questions in the chat
- Discussion across papers: After the paper presentations, the chair facilitates a discussion across the papers of around 20 minutes
- If needed, the chair can facilitate a short 5-minutes break between the paper presentations and before the discussion

Chairs

- We kindly ask ***chairs to arrive in the session 15 minutes*** before start
- One of the conference organizers will meet the chair in the session 15 minutes before start and assign the chair "Host" status
- The role of the chairs is to welcome the participants to the session, introduce the presenters and the title of their papers, keep time (including letting the presenters know when there is 2-5 minutes left), facilitate a short break after the papers if needed, moderate and facilitate a discussion across the papers - at the discretion of the chair
- In case of any technical breakdown, e.g. if a presenter cannot show his/her slides or enter the meeting, the chair can decide to change the order of the papers. You can contact the organizers on seminar.ioa@cbs.dk which will be monitored by our student assistants

Presenters

- We ask presenters to make their presentations short (12-15 minutes) and to stick with the time so that there is time for discussion across papers
- It is important that presenters arrive in the session ***10 minutes before start*** to test if they can share their screen/slides and that everything is set up to start on time

Participants

- In order to generate as much "human interaction" as we can online, we ask the participants (the audience) to keep their camera turned on and microphone turned off

Contact information and Organizing Committee

Contact during the conference

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Trine Pallesen, Copenhagen Business School (tp.ioa@cbs.dk)

Online buzz

During the conference participants are very welcome to tweet at #NOSTS2021

Pre-conference Program

Wednesday May 19, 2021

12.00-14.00	**Pre-Conference Seminar on Markets, STS and Collective Concerns** Organized by the Market & Valuation Cluster at Department of Organization, Copenhagen Business School Participants: Christian Berndt, University of Zurich Christian Frankel, Copenhagen Business School Susi Geiger, University College Dublin Daniel Neyland, University of London José Ossandón, Copenhagen Business School Trine Pallesen, Copenhagen Business School Manuel Wirth, University of Zurich
14.00-15.00	**DASTS General Assembly** Danish Associate for Science and Technology Studies Chair: Christopher Gad, IT University of Copenhagen
15.00-16.00	**Break**
16.00-17.00	**Book launch** *Videnskab, teknologi og samfund. En introduktion til STS* (Hans Reitzels Forlag) by Peter Danholt and Christopher Gad Chair: Peter Danholt, Center for Science-Technology-Society-Studier, University of Aarhus
17.00-18.00	**Book launch** *Energy Worlds – in Experiment* (Mattering Press, 2021), by James Maguire, Laura Watts, and Brit Ross Winthereik (eds.) with Simone Abram, Mónica Amador-Jiménez, Andrea Ballestero, Geoffrey C. Bowker, Dominic Boyer, Jamie Cross, Endre Dányi, Rebecca Ford, Stefan Helmreich, Cymene Howe, Ann-Sofie Kall, Hannah Knox, Noortje Marres, Damian O'Doherty, Lea Schick, and Michaela Spencer. Chair: Brit Ross Winthereik, Technologies in Practice, IT University of Copenhagen

Pre-Conference Seminar on Markets, STS and Collective Concerns.

Organized by the Market & Valuation Cluster at Department of Organization, Copenhagen Business School.

At least since Callon's landmark contributions markets became an usual object of STS study. This, in turn, triggered a vast amount of research in areas like finance, marketing, and management. This seminar delves into a more recent development. The seminar gathers recent work coming from different disciplines – like marketing, sociology and geography- that is both inspired, puzzled and open to problematize the legacy coming from STS in the study the work, knowledge and devices involved in the construction of markets that are supposed to act also as instruments of policy. Markets designed to respond to crucial matters of collective concern.

From collective concerns to collective good(s): A conceptual sketch. Susi Geiger is Full Professor of Marketing & Market Studies at University College Dublin and the holder of an ERC grant for a project "MISFIRES and market innovation".

This paper thinks about market design in the broadest possible manner, as a practice of market innovation pursued not just by professional market actors such as economists, entrepreneurs or other innovators, but also by concerned publics including activists. The paper makes the step from collective concern, as a shared sense that markets ought to be innovated, to the collective good as a shared vision and a driving force to participate in such market innovation. I consider other conceptualisations of the collective good, including the public and the common good, and think through different ways in which concerned publics express their visions of the collective good by example of healthcare markets. The collective good, in my conceptualisation, is not simply a property right or logic of market governance; it is forever a work in progress, a practical achievement and a driving force for collective action.

The new new economic sociology and the market test (or how to intervene a market-intervention). José Ossandón, Associate Professor, Department of Organization, Copenhagen Business School. Trine Pallesen, Associate Professor, Department of Organization, Copenhagen Business School.

This paper is about the new new economic sociologist, the conceptual persona of Callon's performativity thesis. We ask what happens when the new new economic sociologist intervenes in market interventions. Empirically, we interrogate the experience of an ethnographer in a collaborative technical demonstration set to test a new market design aimed to make the electricity industry more environmentally sustainable. Inspired by Deleuze and Stenger, we analyze this situation from the perspective of the method of dramatization. Scientific theories, from this perspective, can be inspected in terms of the specific dramatization they create for those who use them. In particular, we inquiry two different dramatizations. How the ethnographer enacts the academic-personae -the rules and scripts the new new economic sociologist set for researchers that study markets- and the psycho-social type - the way in which the new new economic sociologist presents herself in public and collaborate with those other actors involved in the same market making enterprise.

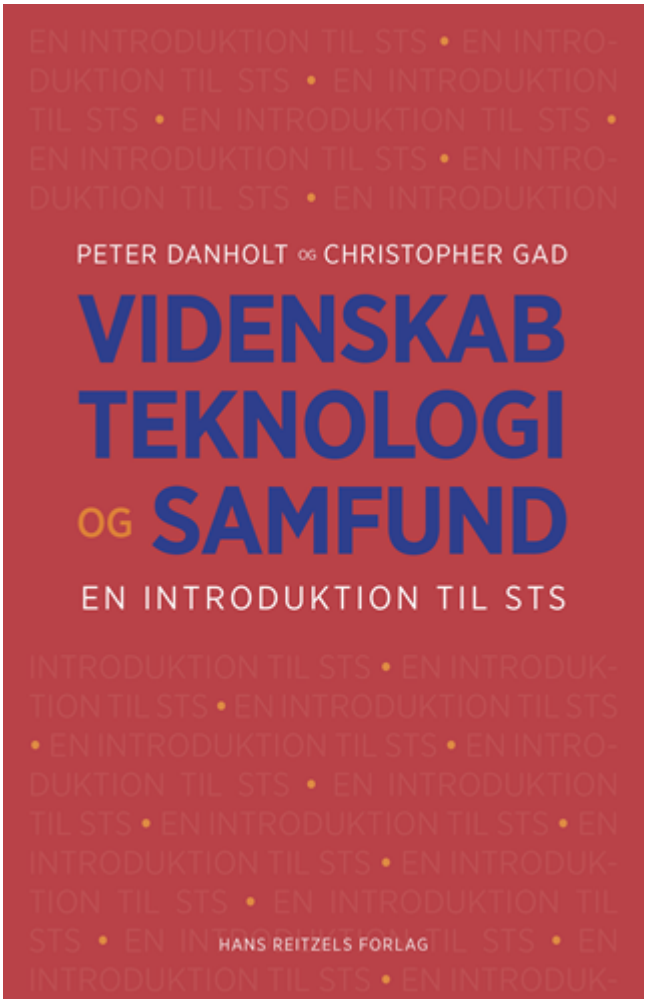
Making markets work for the poor: Smart contracts, digital identities and development without humans. Christian Berndt, Professor of Economic Geography at the University of Zurich. Manuel Wirth, Postdoc in Economic Geography at the University of Zurich.

Our paper is positioned at the crossroads of two longer standing trends in social and development policymaking: on one side, the rise of social impact investment and evidence-based social policy interventions, and, on the other side, the marketization of pro-poor development policy in the global South. The former connects social policy with the world of investment finance and is centering its attention on ways to adequately measure and quantify the success of interventions. Working with a reconfigured understanding of the market as failing the poor, the latter intervenes at the level of the individual subject deploying the instruments and devices of behavioral and experimental economics. In both realms, it is a shared vision of researchers, practitioners and investors to standardize and automate evidence gathering and measurement, bracketing out human fallibility and idiosyncrasy as much as possible. In this context we will focus on the recent drive to the digitalization of policy interventions in the global South, mobilized around buzzwords such as digital identities, smart contracts and the blockchain. The idea is to sketch ideas of a research project that engages with this particular instance of making the market work for the poor.

Economic under-determination: Industrial competitiveness and free allowances in the European carbon market. Véra Ehrenstein, Research Fellow, Institute of Advanced Studies, University College London. Daniel Neyland, Professor, Department of Sociology, Goldsmiths.

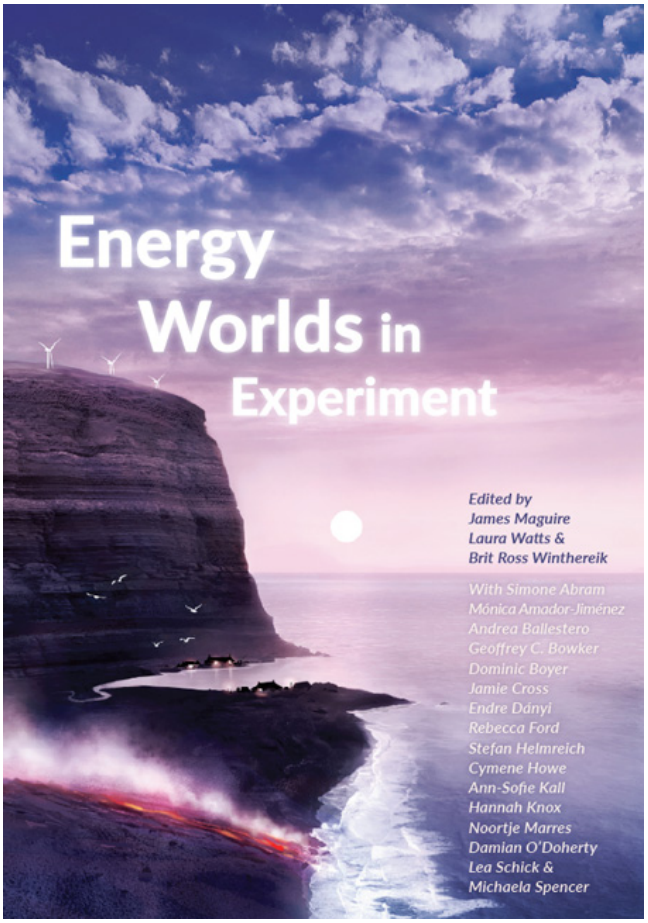
This paper focuses on the European Union Emissions Trading System (EUETS), a climate policy that revolves around the issuance and trading of environmental intangibles called emissions allowances. Set up in the mid-2000s, the cap and trade system has experienced many complications. We propose here to explore a particularly contentious issue: the allocation of free allowances. We will see that deciding on allocation rules leads to vivid debates about whether energy-intensive industries in Europe, such as the manufacturing of cement, can remain competitive in the global economy if climate policy is unilaterally enforced. These debates are focused on a phenomenon referred to as the risk of carbon leakage due to loss of competitiveness. Drawing on an empirical enquiry into the workings of policy-making, the paper examines the ways in which this risk is framed and questioned through lobbying and evidential work. We suggest that the threat to competitiveness posed by the EUETS can neither be established, nor dismissed; a form of under-determination is maintained and carbon leakage as a never-quite-tangible possibility becomes a battleground for protecting European industry over the environment.

Book Launch: ***Videnskab, teknologi og samfund – en introduktion til STS.***



We are happy and proud to announce the publication of a new introduction to STS in Danish. The book contains 15 chapters authored by central Danish STS researchers. The book is in Danish and intended for students and newcomers to STS. The book launch will include presentations by the editors and authors, a lottery of free hand-outs of the book among the attendees, (BYO) drinks and more. Come join us and (perhaps) win a book!. The book launch is hosted by the editors Christopher Gad & Peter Danholt. See more about the book here.

Book Launch: *Energy Worlds in Experiment*



This is an experiment in writing about energy and an exploration of energy infrastructures as experiments. Twenty authors have written collaborative chapters that examine energy politics and practices, from electricity cables and energy monitors to swamps and estuaries. Each chapter proposes a unique format to tell energy worlds differently and to stimulate energy imaginaries: thesis, propositions, interviews, stories, card games, and a graphic novel. The book offers practitioners, students, and scholars a range of new tools to help think, engage and critique energy politics, practices and infrastructures.

Official Program, Day 1, Thursday May 20, 2021

9.00-9.30	**Welcome and opening of NOSTS 2021.** Chair: Jane Bjørn Vedel, chair of the Organizing Committee.
9.30-11.00	**Parallel Session A** A.1. Sociology of Expectations A.2. Accounting, valuing and financing futures A.3. Sustainable futures A.4. Urban assemblages and the imagined city A.5. Valuation A.6. Urban assemblages - smart homes, transport and cities A.7. Bio-medical collectives and affected groups A.8. STS and inter-species A.9. Covid-19 and responsible research practices
11.00-11.30	**Break**
11.30-13.00	**Parallel Session B** B.1. Socio-technical imaginaries B.2. Markets for collective concerns and concerned markets B.3. Digitalization - public sector and work B.4. STS research funding and evaluation B.5. Technologies of caring, telecare B.6. AI - Human machine interactions & weapons B.7. New methods, figures for the STS scholar B.8. STS, caring and engagements 1 B.9. Covid 19 as a challenge for methods, concepts and interventions in STS
13.00-14.00	**Lunch**
14.00-15.30	**Parallel Session C** C.1. Algorithmic and cyber prediction C.2. Speculative futures C.3. Digitalization - work and professions C.4. Assets, finances and accounting C.5. Pre-natal and neonatal sciences C.6. Medical sciences and organization of health care C.7. Sustainable energies, waste and excess C.8. STS and / as artistic intervention C.9. New methods, figures for the STS scholar C.10. Covid and STS research on health caring
15.30-16.00	**Break**
16.00-17.30	**Plenary.** *"The Future-Oriented University".* Annelise Riles, Northwestern University. Chair: Jane Bjørn Vedel, Copenhagen Business School.
17.30	**End of day 1**

Official Program, Day 2, Friday May 21, 2021

9.00-9.30	**Plenary: Morning Coffee & Reflections.** Guests: Maja Horst, DTU Technical University of Denmark and Alan Irwin, Copenhagen Business School. Host: Jane Bjørn Vedel, Copenhagen Business School
9.30-11.00	**Parallel Session D** D.1. Accounting, valuing and financing futures 2 D.2. Material futures, ruins, and past futures D.3. Technologies of care, telecaring D.4. Anthropocene, capitalocene, and climate scientific practices D.5. Cyborg, trouble, and the politics of data practices D.6. AI, DNA and micro-organisms D.7. Controversial scientific objects D.8. STS, architecture and design D.9. STS and / as activism D.10. Covid and experts' construction of the future
11.00-11.30	**Break**
11.30-13.00	**Plenary.** *"Enabling breakdown. Reading futures in the soil",* Maria Puig de la Bellacasa, University of Warwick. Chair: Trine Pallesen, Copenhagen Business School
13.00-14.00	**Lunch**
14.00-15.30	**Parallel Session E** E.1. Bio-futures E.2. Future universities, future workers E.3. Interspecies E.4. Organization of public sector and innovation policies E.5. Digitalization - design – platforms E.6. Energy – controversies E.7. STS, caring and engagements 2 E.8. STS and the challenge of AI and Data Practices E.9. Covid-19 and socio-technical organizing
15.30-16.00	**Break**
16.00-17.30	**Plenary: Futures Panel** Panel speakers: Joan Fujimura, University of Wisconsin Alan Irwin, Copenhagen Business School Lise Justesen, Copenhagen Business School Susi Geiger, University College Dublin Daniel Neyland, University of London Chair: José Ossandon, Copenhagen Business School
17.30	**End of conference**

Subtheme sessions program

Day 1 - Thursday May 20

9:30 - 11:00 Day 1 - Parallel session A

Subtheme: STS and the sociotechnical construction of the future		
Session Title: A.1. Sociology of Expectations		
Session Chair: Trine Pallesen		
Christopher Groves, Karen Henwood, Nick Pidgeon, Catherine Cherry, Erin Roberts, Fiona Shirani, Gareth Thomas	Cardiff University	The future is flexible? Exploring expert visions of energy system decarbonisation
Lilla Vicsek	Corvinus University of Budapest	Automation and the future of work – Lessons from the sociology of expectation
Outi Pitkänen	Norwegian University of Science and Technology	The production of end-user flexibility in Norwegian experts' visions of the future
Tom Hobson	University of Cambridge	Singing (the end of) our world into existence

Subtheme: STS and the sociotechnical construction of the future		
Session Title: A.2. Accounting, valuing and financing futures		
Session Chair: Lise Justesen		
Ida Schrøder, Emilia Cederberg	University College Copenhagen, Stockholm School Economics	Including the "messy picture" of societal challenges in economic decision-making
Jack Kværnø-Jones	Copenhagen Business School	Calculating Empires and Open Source Ambassadors: constructing banking futures through organising Fintech
Jacob Hasselbalch, Ludwig Bengtsson Sonnesson, Mark Cooper, Johannes Stripple	Copenhagen Business School	'Show us your numbers!' Life cycle assessments as marketing devices
Karl Palmås, Nicholas Surber	Chalmers University of Technology	Legitimacy and time in technoscientific capitalism

Subtheme: STS and the sociotechnical construction of the future		
Session Title: A.3. Sustainable futures		
Session Chair: Jakob Laage-Thomsen		
Elena Bogdanova, Linda Soneryd	University of Gothenburg, University of Gothenburg	Shifting temporalities in practicing sustainability: The renovations of the Million Program, Sweden
Johanna Ahola-Launonen	Aalto University, Finland	The performativity of expectations for “the bioeconomy” and the effect on intuitions of justice
Julia Kirch Kirkegaard	Technical University of Denmark	Reaching the future by reaching back - the role of time in China's STI policy to meet the urgency of rising sustainability concerns
Magdalena Kuchler, Bregje van Veelen	Uppsala University	Disassembly and the heterotemporalities of low-carbon transitions

Subtheme: STS and matters of concern		
Session Title: A.4. Urban assemblages and the imagined city		
Session Chair: Irina Papazu		
Andrea Schikowitz	University of Vienna	The role of collaborative housing in creating urban futures in Vienna – relational creation of alternativeness
Ask Greve Johansen	Aalborg University	Assembling political visions in the 2019 Copenhagen Local Authority Plan
Meri Jalonen, Sari Yli-Kauhaluoma	Aalto University	Automating urban futures: From prototypes to practice?
Nataliya Volkova	Oxford Russian Fund	The futures of zoning relief

Subtheme: STS and matters of concern		
Session Title: A.5. Valuation		
Session Chair: Francis Lee		
Anne-Sofie Lautrup Sørensen	IT University of Copenhagen	Future figurations through carbon data - politics of oil and gas in Stavanger, Norway
Bård Lahn, Kristin Asdal	University of Oslo	Valuing future oil: ‘Tools of valuation’ and the governing of Norwegian oil resources

Justyna Bekier Andrea Beye, Cristiana Parisi	Copenhagen Business School	Emergence and Stabilization of Performance Accounts for the Circular Economy - the Role of Representations
Karen Boll	Copenhagen Business School	The Promissory Economy of Internal Control

Subtheme: STS and matters of concern		
Session Title: A.6. Urban assemblages - smart homes, transport and cities		
Session Chair: Torben Elgaard Jensen		
Karin Edberg	Linköping University	E-biking as social practice – the emergence of a new travel routine?
Line Kryger Aagaard	Aalborg University	Tinkering with technology: New practices and redistributed roles within the smart home
Pinar Kaygan, Harun Kaygan, Asuman Özür Kaysan	Middle East Technical University, University of Southern Denmark	Gendered Negotiations of Material and Social Interactions in Public Transport
Stine Rosenlund Hansen, Mette Weinreich Hansen	Roskilde University	"I think it's a shame they are calling us a ghetto, I don't think this a ghetto." – Enactments of underprivileged neighborhoods and how to live there

Subtheme: STS and matters of concern		
Session Title: A.7. Bio-medical collectives and affected groups		
Session Chair: Helene Ratner		
Dixi Louise Strand	Roskilde University and Region Zealand	Finding the cure for our children: Exploring parent-led transformations of biomedical knowledge production, distribution, and consumption
Karoliina Snell, Heta Tarkkala	University of Helsinki	"Here comes Bio-me". Recruiting children to biobanks
Lea Larsen Skovgaard, Mette Nordahl Svendsen	University of Copenhagen	Legitimate use of health data: shifting ideas about entitlements to use and the character of data
Sarah Wadmann, Mette B. Steffensen Christina L. Matzen	VIVE - The Danish Center for Social Science Research, Danish Ministry of Industry, AbbVie Denmark	Turning medical technologies into matters of collective concern

Subtheme: The future of STS		
Session Title: A.8. STS and inter-species		
Session Chair: Andreas Birkbak		
Beyza Dilem	Ozyegin University	Yummy Anthropocene Feast: A Multi-Species Ethnography on Istanbul's Fish
Kaajal Modi	University of the West of England	Fermenting Futures: towards an interspecies interdepence
Raune Frankjaer, Lone Koefoed Hansen	Aarhus University	Plant-human futures: socio-technical inter-species collectives with bio-electrical sensing technology
Selen Eren, Anne Beauliue	University of Groningen	Epistemic value of care(less) practices: From birds in the hand to data in the bank

Subtheme: STS in the time of the pandemic		
Session Title: A.9. Covid-19 and responsible research practices		
Session Chair: Jane Bjørn Vedel		
Katja De Neergaard	The IT University of Copenhagen	Experiencing privacy: Digitalization of the private sphere during lockdown
Marietjie Botes	University of Luxembourg	Democratic dialogue as socio-technological tool to overcome vaccine nationalism
Serge Horbach	Aarhus University	Pandemic publishing: Changes in journal peer review in times of the Covid-19 pandemic

11:30 - 13:00 Day 1 - Parallel sessions B

Subtheme: STS and the sociotechnical construction of the future		
Session Title: B.1. Socio-technical imaginaries		
Session Chair: Henriette Langstrup		
Abe Hendriks, Erik Paredis	University of Groningen, Ghent University	Exploring sociotechnical imaginaries of a circular economy: different futures ahead?
Kamille Karhunmaa	University of Helsinki	Imagining Energy Transitions: Carbon Neutrality in Finland
Anna Orrghen	Uppsala University	A monument of the future: The rise and fall of the Swedish national monument, celebrating the turn of the millennium
Rachel Hill	Goldsmiths, University of London	The Fictioning of NewSpace Futurity

Subtheme: STS and matters of concern		
Session Title: B.2. Markets for collective concerns and concerned markets		
Session Chair: José Ossandón		
Alexander Paulsson, Stig Westerdahl	Lund University, Malmö University	This is not a bus: standardization as ontological de-politization in public transport markets
Ingrid Stigzelius, Lina Nyroos	Stockholm School of Economics, Södertörn University	Concerning talk in the agencing of collaboration: methodological insights from Conversation Analysis
Linus Johansson Krafve, Nurgül Özbek	Linköping University	The Making of Concerns in Markets During Times of Crisis. The Case of PPE Markets during the COVID-19 Pandemic

Subtheme: STS and matters of concern		
Session Title: B.3. Digitalization - public sector and work		
Session Chair: Karen Boll		
Barbara Nino Carreras	IT University of Copenhagen	(Digital) Welfare for All? Disabled People and their Relatives as Participants and Non-Users in Denmark's Digital State
Helene Ratner, Kasper Trolle Elmholt	Aarhus University	Predicting children at risk: Controversial algorithms and infrastructural attachments

Irina Papazu, Morten Hjelholt	IT University of Copenhagen	The Inclusion Office
Marie Meilvang, Anne Marie Dahler	UCL University College	Trusting professional discretion: The place of professional judgements in data-driven governing

Subtheme: STS and matters of concern		
Session Title: B.4. STS research funding and evaluation		
Session Chair: Alan Irwin		
Aixa Aleman-Diaz	Copenhagen Business School	National Research and Innovation Policy: between Curiosity, Market, and Mission
Alison Gerber	Lund University	Drawing the line: Evaluation in emerging academic disciplines
Annika Linell, Ingemar Bohlin, Morten Sager	University of Gothenburg	The image of research synthesis – a case study on systematic review process at the Swedish institute of educational research

Subtheme: STS and matters of concern		
Session Title: B.5. Technologies of caring, telecare		
Session Chair: Peter Danholt		
Joni Jaakola	University of Turku	The Powers of Uncertainty in Telecare
Juliane Jarke, Irina Zakharova	University of Bremen	Educational technologies as a matter of care
Maria Temmes, Venla Oikkonen	Asian University for Women**,** Tampere University	Engaging futures through hormones

Subtheme: STS and matters of concern		
Session Title: B.6. AI - Human machine interactions & weapons		
Session Chair: Jane Bjørn Vedel		
Karen Richmond	University of Copenhagen	Overcoming Opacity in AI-driven Autonomous Weapons Systems
Luisa Teresa Hedler Ferreira	Copenhagen Business School	The Legalities of Death by Algorithm – comparing the legal framework of driverless cars and automated weapons.

Maria Hedlund, Erik Persson	Lund University	The Future of AI Development
Kevin Weller	Munich Center for Technology in Society	Playing drone-warfare? An empirical study into the making of weaponized drones within virtual communities of practice

Subtheme: The future of STS		
Session Title: B.7. New methods, figures for the STS scholar		
Session Chair: Ask Greve		
Hilde Reinertsen, Kristin Asdal	University of Oslo	The future of STS: Including documents in the repertoire of practices - a method
Katrine Meldgaard Kjær, Line Henriksen	IT University of Copenhagen	On the intrasist and speaking in voices
Marie Widengård	Gothenburg University	Staying with the Jatropha Trouble: The Modest Witness Meets the Troubled Witness
Tim Flink, Martin Rienhart, Cornelia Schendzielorz	Humboldt University of Berlin	When novelty needs nostalgia: 21st century rhetorics in science and policy leadership work of making an AI project compliant

Subtheme: The future of STS		
Session Title: B.8. STS, caring and engagements 1		
Session Chair: Jacob Hasselbalch		
Laura Brandt Sørensen, Stine Rosenlund Hansen, Niels Heine Kristensen	Roskilde University	Negotiating Sustainability in (Future) Agrifood Educations: A Praxiographic Case-study
Niels Christian Mossfeldt Nickelsen, Doris Lydahl	Aarhus University	Careful engagements
Stinne Ballegaard, Astrid Meyer, Anders Albrechtslund	VIVE – The Danish Center for Social Science Research, Aarhus University	Empirical ethics and surveillance. Dignity in care for people living with dementia
Thomas Völker, Zora Kovacic, Roger Strand	University of Bergen	Future Loops – Careful engagements with European circular economy policies and indicators

Subtheme: STS in the time of the pandemic

Session Title: B.9. Covid 19 as a challenge for methods, concepts and interventions in STS		
Session Chair: Frank Meier		
Cecilie Kampmann	Copenhagen Business School	Deceleration and Crisis: A case-study of temporal work in a multinational company during Covid-19
Daniela Jauk, Magdalena Wicher, Anita Thaler, Birgit Hofstätter	University of Akron	Publishing queer-feminist research and voices in pandemic times
Giampietro Gobo	University of Milan	SARS-COV 2 and the probiotic turn

14:00 - 15:30 Day 1- Parallel session C

Subtheme: STS and the sociotechnical construction of the future		
Session Title: C.1. Algorithmic and cyber prediction		
Session Chair: Anders Koed Madsen		
Béatrice Cointe	University of Oslo	Where climate futures are made: into the machinery of mitigation pathways production
Kjetil Rommetveit, Niels Van Dijk	University of Bergen, Vrije Universiteit Brussels	Privacy engineering and the techno-regulatory imaginary
Matt Spencer	University of Warwick	Technologies of Expectation: Cyber Security's Futures
Simon Egbert	Technische Universität Berlin	Predictive analytics and the socio-technical defuturization of the future

Subtheme: STS and the sociotechnical construction of the future		
Session Title: C.2. Speculative futures		
Session Chair: Shiv Issar		
Dayna Jeffrey	York University	AI, Transhumanism & the Construction of the Future
Kasper Ostrowski	Aarhus University	Enacting Futures
Martin Perez Comisso	Arizona State University	How images of technology affect images of the future? A Latin American exploration
Matthew Spaniol, Nicholas J. Rowland	Aarhus University, Penn State University	Studying Futures Studies

Subtheme: STS and matters of concern		
Session Title: C.3. Digitalization - work and professions		
Session Chair: Anna Orrghen		
Meri Jalonen	Aalto University	Four faces of automation: Exploring hybrid practices involving humans and robots
Réka Andersson, Maria Eidenskog	Linköping University	(Socio-technically) Constructing future building information models

Simy Kaur Gahoonia	IT University of Copenhagen	Conceptualising and school-ling technology education in the case of 'teknologiforståelse'
Vasilis Galis	IT University of Copenhagen	Datafication of police work: unboxing the contested social practice of public surveillance

Subtheme: STS and matters of concern		
Session Title: C.4. Assets, finances and accounting		
Session Chair: Jack Kværnø-Jones		
Kean Birch, Troy Cochrane, Callum Ard	York University	Data as asset? The measurement, governance, and valuation of digital personal data by Big Tech
Kristian Bondo Hansen	Copenhagen Business School	A sociology of high expectations: Competencies and domain knowledge in quantitative finance
Ulises Navarro Aguiar	University of Gothenburg	What is design worth? The assetization of design expertise

Subtheme: STS and matters of concern		
Session Title: C.5. Pre-natal and neonatal sciences		
Session Chair: Sarah Wadmann		
Astha Jaiswal	Central University of Gujarat	Responsible Innovation and Umbilical Cord Blood Banking in India: Exploring Ethical Issues
Josie Hamper, Manuela Perrotta	Queen Mary University of London	Three perspectives on fertility treatment 'add-ons' in the UK
Manuela Perrotta, Josie Hamper	Queen Mary University of London	Embryos on camera: the travel of reproductive imaging from the lab to the social world

Subtheme: STS and matters of concern		
Session Title: C.6. Medical sciences and organization of health care		
Session Chair: Dixi Louise Strand		
Kristofer Hansson	Malmö University	New biomodifying technologies and near future alignment work
Marianne Mäkelin	University of Helsinki	A mosquito, a population, a species, an ecosystem: Enacting ecologies in gene drive development

Nienke van Pijkeren, Hester van de Bovenkamp, Iris Wallenburg, Roland Bal, Siri Wiig	Erasmus University Rotterdam, University of Stavanger	Centralization, Acute care landscape, Periphery, Quality Standards
Mie Seest Dam, Sara Green, Ivana Bogicevic, Line Hillersdal, Mette N. Svendsen	University of Copenhagen	Precision Patients: Selection practices and moral pathfinding in experimental oncology

Subtheme: STS and matters of concern		
Session Title: C.7. Sustainable energies, waste and excess		
Session Chair: Julia Kirch Kirkegaard		
Francesco Colona	Linköping University	Climate science in numbers: Carbon governance, mathematical relations and transitions targets
Sampsa Hyysalo	Aalto University	Citizen activities in energy transitions: tracing the configurational movements to study sociotechnical change
Sebastian Abrahamsson	Uppsala University	Preventing or recycling? Tensions between the circular economy and the waste hierarchy: the case of food waste
Taru Lehtokunnas, Olli Pyyhtinen	Tampere University	Doing and undoing food waste: Transition towards the circular economy and the practices of valuing food (waste) at retail stores

Subtheme: The future of STS		
Session Title: C.8. STS and / as artistic intervention		
Session Chair: Alison Gerber		
Aafke Fraaije, Marjoleine van der Meij, Frank Kupper	Vrije Universiteit Amsterdam	Artistic citizen engagement for Responsible Research and Innovation (RRI) in smart city Amsterdam
Anders Blok, Line Thorsen	University of Copenhagen	Bruno Latour in New Media Art
Felipe Raglianti, Yenny Díaz	University of Chile, Alberto Hurtado University	Importance, expression, understanding: modes of thinking the future collectively
Line Marie Thorsen	Aarhus University	Broken techno-ecological systems and art as reparative gestures

Subtheme: The future of STS		
Session Title: C.9. New methods, figures for the STS scholar		
Session Chair: Lise Justesen		
Mette Simonsen Abildgaard, Carina Ren	Aalborg University	Arctic Connectivity Futures – a frugal approach
Minna Saariketo, Sija Ridell, Auli Harju	Aalto University	Tackling the obstacles to imagining mediated futures: Observations from experimental workshops with young people
Peter Danholt	Aarhus University	Experimenting with worlds
Torben Elgaard Jensen	Aalborg University	How the pandemic changed our meeting culture

Subtheme: STS in the time of the pandemic		
Session Title: C.10 Covid and STS research on health caring		
Session Chair: Morten Knudsen		
Cæcilie Laursen	IT University of Copenhagen	(Tele)caring in pandemic times: Ethnographic accounts of the implementation of video consultations in outpatient clinics
Laura Corti	University Campus Bio-Medico of Rome	Building Digital Bridges with Elderly: Open Challenges Related to Covid-19
Marjo Kolehmainen	Tampere University	Networked Care: COVID-19, Digital Therapy, and The Future of Well-Being
Sebastian Rojas Navarro, Samanta Alarcon Arcos	Universidad Andres Bello, Pontificia Universidad Católica de Chile	Care in everyday life during the pandemic: results of CUIDAR study

Day 2 - Friday May 21

9:30 - 10:30 Day 2 - Parallel Sessions D

Subtheme: STS and the sociotechnical construction of the future		
Session Title: D.1. Accounting, valuing and financing futures 2		
Session Chair: Ida Schrøder		
Marie Bemler	Stockholm School of Economics	Harmonizing expectations, how path creating narratives affect technology, organizations, and society
Neil Pollock	University of Edinburgh	How Hype Begins and Ends: The Gartner Hype Cycle and Product-based Expectations
Louise Klarskov Skyggebjerg	Copenhagen Business School	Fictional expectations in the world of technology, entrepreneurship, and finance
Nicolas Zehner	University of Edinburgh	The Role of Scientific Expertise in the Drive for 'Smart Urbanism'

Subtheme: STS and the sociotechnical construction of the future		
Session Title: D.2. Material futures, ruins, and past futures		
Session Chair: Kristin Asdal		
Christian De Cock, Damian O'Doherty	Copenhagen Business School, The University of Manchester	Fictional matters of concern: Human/nonhuman assemblages in times of catastrophe
Jessamy Perriam	IT University of Copenhagen	Back to the future: When past outsourcing practices constrain socio-technical futures in the UK public sector
Maria João Simões, Ana Filipa Martins Délcio Faustino	University of Beira Interior	ICTs: reflecting on a path for a less unequal future

Subtheme: STS and matters of concern		
Session Title: D.3. Technologies of care, telecaring		
Session Chair: Daniel Sage		
Frauke Rohden	University of Oslo	Following the pandemic on Reddit – Science enthusiasts' hyperlinking practices

Julie Mewes	Ruhr-Universität Bochum	Matters of Arctic sleep: Hospital staff's shifting sleep routines and its devices-in-use
Thorben Simonsen, Dara Ivanova	IT University of Copenhagen, Erasmus University Rotterdam	Placing Future Care: Digital Care Spaces as a Matter of Concern?

Subtheme: D.4. STS and matters of concern		
Session Title: Anthropocene, capitalocene, and climate scientific practices		
Session Chair: Linda Soneryd		
António Carvalho, Mariana Riquito	University of Coimbra	Zooming in on Geoengineering - uncertain planetary futures and the ontological politics of the Anthropocene
Conrad George	Pompeu Fabra University	The science of climate change: A source of national-level variation rather than commonality
Matteo De Donà, Sebastian Linke	University of Gothenburg	"Close but not too close": experiences of bridging science and policy from three international advisory organization

Subtheme: STS and matters of concern		
Session Title: D.5. Cyborg, trouble, and the politics of data practices		
Session Chair: José Osssandón		
Emilie Moberg	Stockholm University	Capitalocene as travelling standards: considering the (im)mutability of dualist standards in literary fiction and education focusing inter-species relations
Juliana Michelon	Goethe University Frankfurt am Main	The Collective Cyborg Body
Tintin Wulia	University of Gothenburg	Boundary Objects, Things-in-common, and Future Hybridity
Ville Aula	London School of Economics and Political Science	Where should STS follow data? – The future of studying data practices

Subtheme: STS and matters of concern
Session Title: D.6. AI, DNA and micro-organisms
Session Chair: Vassilis Galanos

Eva Vibeke Kofoed Pihl	Roskilde University	Green Gold – translational science on living cell factories and the hope of engineering metabolisms to enable a sustainable future
Frank Meier	Copenhagen Business School	Future technology meets regulation of yesteryear: The invisible leadership work of making an AI project compliant
Rafaela Granja	University of Minho	Using recreational DNA databases to identify criminal suspects: The participatory turn and the co-production of biovalue in forensic genetics

Subtheme: STS and matters of concern		
Session Title: D.7. Controversial scientific objects		
Session Chair: Nanna Bonde Thylstrup		
Antoinette Fage-Butler, Loni Ledderer, Kristian Hvidtfelt Nielsen	Aarhus University	Addressing the challenge of climate change: Findings from a literature review on public mistrust
Filipa Queirós	University of Coimbra	The depletion of boundaries through forensic DNA phenotyping technology
Maria Eidenskog, Wiktoria Glad	Linköping University	Looking through glass to explore reach in new building designs
Maja Horst, Jesper Hintze Nielsen, Gro Berg Sørensen	DTU Technical University of Denmark	Communicating AI for responsible research and innovation

Subtheme: The future of STS		
Session Title: D.8. STS, architecture and design		
Session Chair: Lise Justesen		
Anders Koed Madsen, Sofie Thorsen	Aalborg University	Urban Vision after the computational turn
Andrea Gaspar	University of Coimbra	Designing the social: STS and the anthropologist as (if a) designer - towards inventive modes of knowledge
Andreas Brandt, Maja Hojer Bruun	Aarhus University	Experiences and experiments with floods and/as urban futures
Stefanie Egger, Christian Lepenik	FN Joanneum Institute Design & Communication	Curating a written Exhibition about the Tacit Dimensions of Design

Subtheme: The future of STS		
Session Title: D.9. STS and / as activism		
Session Chair: Søren Lund Frandsen		
Bartosz Ślosarski	University of Warsaw	Visibility? Do It Yourself! Sociotechnical Movements in times of Climate Catastrophe
Catharina Landström	Chalmers University of Technology	Could stakeholder engagement contravene democratic environmental decision-making?
Gareth Thomas, Catherine Cherry, Chris Groves, Erin Roberts, Fiona Shirani, Nick Pidgeon, Karen Henwood,	Cardiff University	“It’s an industrial town”: public things in shaping decarbonisation concerns in Port Talbot, South Wales
Michael Hockenhull	IT University of Copenhagen	Political Economy, STS and Digital Futures: The Danish Digitalization Industry

Subtheme: STS in the time of the pandemic		
Session Title: D.10. Covid-19 and experts’ construction of the future		
Session Chair: Mareike Smolka		
Emilia Araujo, Paula Urze	University of Minho, Universidade Nova of Lisbon	Scientists visions about the future and the role of interdisciplinarity
Jenske Bal, Sabrina Rahmawan-Huizenga	Erasmus University	Anticipating uncertain futures: regional healthcare governance of COVID-19
Laura Lucia Parolin, Carmen Pellegrinelli	Southern Denmark University, Lapland University	Caring practices during the pandemic. The case of Superbergamo
Anne Bremer, Magdalena Wicher	University of Bergen	Responsible Research and Innovation at pandemic speed

14:00 - 15:30 Day 2- Parallel Sessions E

Subtheme: STS and the sociotechnical construction of the future		
Session Title: E.1. Bio-futures		
Session Chair: Brit Winthereik		
Lenka Veselá	University of Technology Brno	Sex Hormone Ecologies as Speculative Ecologies and Ecologies of Speculations
Piotr Maron	University of New South Wales	Future as a mode of making a presence. A case of male eating disorders
Thomas Lemke	Institute of Sociology	Welcome to Whenever. Exploring Suspended Life in Cryopreservation Practices

Subtheme: STS and the sociotechnical construction of the future		
Session Title: E.2.Future universities, future workers		
Session Chair: Kean Birch		
Hans Schildermans	University of Vienna	New uses of the university? Third mission-policies, sociotechnical imaginaries, and the creation of the future.
Olga Loza	University of St Andrews	Constructing a 'just' future: Technoutopian visions of the graduate labour market
Tamar Nir	King's College London	English Higher Education market as a matter of collective concern

Subtheme: STS and matters of concern		
Session Title: E.3. Interspecies		
Session Chair: Jacob Hasselbalch		
Hedvig Gröndal	Swedish University of Agriculture	Separated yet connected: Early prevention of antimicrobial resistance in Swedish husbandry and human health care
Malte Rödl, Sofia Joosse, Jutta Haider	Swedish University of Agricultural Sciences	I, My Selfie, and Nature: entanglements with wilderness
Morten Knudsen, Sharon Kishik	Copenhagen Business School	Knowledge and non-knowledge in the management of zoonosis – with livestock MRSA as a case

Tone Druglitrø	University of Oslo	Procedural Care: Licensing Practices in Animal Research

Subtheme: STS and matters of concern		
Session Title: E.4. Organization of public sector and innovation policies		
Session Chair: Tim Flink		
Alan Irwin	Copenhagen Business School	Taking the innovation cure: futures, ambivalences, contextualities and democracies
Annina Lattu, Yuzhuo Cai	Tampere University	Institutional logics of open science in university-industry collaboration
Louise Permiin	Design School Kolding	Embodied Partnerships
Peter Skærbæk, Kjell Tryggestad	Copenhagen Business School	Economics and the mediator role of accounting in performing organizational spaces – the case of public sector reforms

Subtheme: STS and matters of concern		
Session Title: E.5. Digitalization - design – platforms		
Session Chair: Frank Meier		
Irem Dilek, Pinar Kaygan	Middle East Technical University	Digital transformation of work: Where do designers find meaning in online crowdwork platforms?
Louise Jørring	Copenhagen Business School	Is automation the future of casework? Automation projects and the emergence of new work tasks
Marta Choroszewicz	University of Eastern Finland	Chasing technology in the public healthcare and social service organization: Professionals' coping strategies when working with technologies in-the-making
Nicola Ens, Attila Marton	Copenhagen Business School	Why not side hustle? Fashion reselling on digital labour platforms

Subtheme: STS and matters of concern		
Session Title: E.6. Energy – controversies		
Session Chair: Trine Pallesen		
Aleesha Rodriguez	Queensland University of Technology	Batteries With(out) Scale

Caroline Anna Salling	IT University of Copenhagen	Excess of digitalization: District heating and a Facebook datacenter
Goeun Park, Cindy Kohtala	Aalto University School of Arts	Materiality in collective action: A review of material participation in energy transition
Hannes Lagerlöf	University of Gothenburg	Political Metallurgy: Functionalizing Copper in Swedish Nuclear Waste Management

Subtheme: The future of STS		
Session Title: E.7. STS, caring and engagements 2		
Session Chair: Minna Saariketo		
Henriette Langstrup, Bryan Cleal, Jonathan Garfinkel	University of Copenhagen, Steno Diabetes Center Copenhagen, University of Alberta	Living on the loop - agency, skill and (re)enchantment in DIY Artificial Pancreas System use
Isabella Pistone	University of Gothenburg	Keep open! Methodological agnosticism and engagement in evidence-basing disability care
Mareike Smolka	University Maastricht	Conflicting epistemic goods, informal care practices, and multiple research objects in a clinical trial on mindfulness meditation

Subtheme: The future of STS		
Session Title: E.8. STS and the challenge of AI and Data Practices		
Session Chair: Neil Pollock		
Kalle Kusk Gjetting	Aarhus University	Upon opening the blue box: Investigating agency when your manager is an algorithm
Shiv Issar	University of Wisconsin-Milwaukee	Race, Identity, and Algorithmic Dissonance
Vassilis Galanos	University of Edinburgh	Expectations and Expertise: can Science and Technology Studies (STS) and Artificial Intelligence (AI) learn and benefit from each other?
Francis Lee	Chalmers University of Technology	Algorithmic absences: Examining the composition of absence in data practices

Subtheme: STS in the time of the pandemic
Session Title: E.9. Covid-19 and socio-technical organizing

Session Chair: Magdalena Wicher		
Dan Sage, Chris Zebrowski, Nina Jörden	Loughborough University	Disfunction and distrust as organization: rethinking the organizational politics of the UK Covid-19 response with the ResilienceDirect platform and its affects
Sabrina Rahmawan-Huizenga	Erasmus University Rotterdam	Temporalities of Covid-19 responses: how time influences public values and responsibilities within decision-making
Syb Kuijper, Martijn Felder, Roland Bal, Iris Wallenburg	Erasmus University Rotterdam	Frontline Professionals - nurses' valuation work in Covid Care
Søren Frandsen, Jakob Laage-Thomsen	Copenhagen Business School	Overflowing Knowledge Mandates: Reconfiguring Socio-Technical Systems of Preparedness Expertise in Denmark, Norway, and Sweden during COVID-19

Abstracts
(alphabetical order by first author's last name)

Preventing or recycling? Tensions between the circular economy and the waste hierarchy: the case of food waste, *Sebastian Arbrahamsson, Uppsala University*

In Sweden, investments are made to increase the amount of food waste that gets sorted and treated for recycling. A national environmental goal is that by 2020, 50% of all food waste from households, restaurants, commerce, gets recycled as fuel and fertiliser. Municipal and regional policy stipulates that sorting and collection of said waste is made possible. And waste management companies invest in the technologies and infrastructures needed to convert the waste to a resource. Meanwhile, the Swedish environmental code adheres to the waste hierarchy which makes it clear that efforts to prevent and minimise waste are to be prioritised over recycling. The best waste is the waste that never is. This paper analyses the tensions between these two models – the circular economy and the waste hierarchy – drawing on interviews with waste workers in Sweden, and an analysis of related and relevant documents. The point of doing so is twofold: 1) to articulate the frictions and tensions between current and dominant situation and a situation modelled according to the waste hierarchy, and 2) to highlight the risks with recycling in favour of prevention.

The performativity of expectations for "the bioeconomy" and the effect on intuitions of justice, *Johanna Ahola-Launonen, Aalto University*

"The bioeconomy" is a policy framework that promises simultaneous economic, environmental, and social sustainability by transitioning to a biomass-based renewable economy. This paper analyzes the promissory language in bioeconomy policies (Finnish and EU). A central expectation concerns the amount of usable biomass and land for biobased production. The original bioeconomy policy relies (2012) on a myth of endless amounts of biomasses that could enable the replacement of fossil resources. Even though the update process of the EU bioeconomy strategy (2018) has resulted in a change in this rhetoric, the biomass myth is still vivid. I argue that this promissory language hampers democratic societal change towards sustainability by decreasing societal motivation to conduct systemic changes. The expectations build around the bioeconomy are performative and create normative images of the future. They affect how the related root problems are framed and understood and can create a political expectation that global challenges, such as halting the climate change, can be solved with technological fixes. If citizens expect technology and endless biomasses to solve our problems, they will not think climate policies affecting current societal practices and lifestyles are fair.

National Research and Innovation Policy: between Curiosity, Market, and Mission, *Aixa Alemann-Diaz, Copenhagen Business School*

What determines the distribution of national funding for research and innovation (R&I)? The literature has described a move towards “mode 2,” with a strong focus of applied science and user-involvement, while others emphasize the value of basic science and “Nobel Prizes”. We propose an analytical framework outlining three ideas -curiosity, market, and mission- that explain how to drive national R&I. We trace the changing balance of these ideas over time in 14 national R&I policies in the US, China and Denmark between 2003-2020. By analyzing these documents, we identify similarities and differences in the presence and influence of these ideas. We point to inner tensions and changes within each idea. Contrary to predictions in the literature, we find a co-existence and mutual influence of these ideas over time. We discuss the dynamics of the patterns and the implications for national S&I strategies. We contribute to the theoretical understanding of these ideas by adopting the term “isomorphic difference” to capture the simultaneous spread and translation of ideas across contexts. This work contributes to the conference by providing an analysis of national narratives over time that sheds light on constructions that countries adopt to justify S&I investments in particular futures.

(Socio-technically) Constructing future building information models, *Réka Andersson, Linköping University, Maria Eidenskog, Thematic Studies - Technology and Social Change, Linköping university*

Building information modelling (BIM) is argued to create a revolution within the construction industry through more efficient use of resources and heightened interprofessional collaborations. However, BIM has been accessible for decades and has yet not managed to become the standard industry method in practice. In contrast to previous working processes where different professions used their own specialized software, BIM aims to incorporate all work and information about the construction process in one database. This research project focuses on the resistance towards BIM by showing how the working processes connected to BIM challenge traditional knowledge hierarchies and create new problems for some professionals. Workshops and interviews with different professions in an international project-based organization suggest that senior professionals with long working life experience, but limited technical competence of BIM, have problems to fully adapt to this new technology. BIM is ill suited to their purposes and imposes limitations to their expertise. While the latest technology can bring opportunities of new knowledge and change, its usefulness for practice can be questioned if it counteracts established knowledge infrastructures. By destabilizing these knowledge infrastructures BIM makes their existence visible which in turn has consequences for how future buildings are modelled.

Scientists visions about the future and the role of interdisciplinarity, *Emilia Araujo, University of Minho, Paula Urze, Universidade Nova of Lisbon*

As stated in the guidelines for this conference, future is a major concern of present days' times. Pandemic disaster has reinforced in many ways the interest in foreseeing about future catastrophes, and anticipating technologies and modes of dealing with them. This communication seeks to show what scientists actually think about the ability of science to prevent societies from crisis similar to covid-19 pandemic, and what are their views about the role they will have on that process, as well as on the process of crisis recovery. Actually recent years have witnessed a growing interest in future, and future studies in general. Several researchers have been made about the trends and possible societal developments in many areas. However, few studies have been published concerning the perceptions, the visions and the images scientists have on that, what role do they ascribe to science, and politics for designing that future, and what are the main actions that in their view politics should take in the present, to avoid the worsts consequences. This communication will analyse the dimensions giving particular attention to the perceptions of scientists about the best practices to adapt for researching complex societal problems. The paper is based on a survey involving researchers working in Portuguese research units.

Where should STS follow data? – The future of studying data practices, *Ville Aula, London School of Economics and Political Science*

Data science is an emerging profession and a field of study, and yet as Ribes (2019) argues, it echoes themes that STS has addressed throughout its history. Computational techniques that were a decade ago the privilege of scientific researchers have now diffused to the wider society. Data as a topic of research, which has been central to STS inquiry already from Latour's and Woolgar's laboratory life, is transforming and finding new manifestations. How should STS accommodate for this diffusion of data and analytical techniques in the society? In this paper I argue that it is imperative that STS scholars revisit classical studies and theories of using data in scientific work and reiterate their value to matters outside the scientific realm. Related fields, such as sociology and media and communications, have often intergrated STS sensibility and insights into their work but use them to contribute to their own discussions. This is particularly visible in the critical data, algorithm, and platform studies that draw from STS understanding of technology but make inequality, relations of power, and justice the onus of their arguments.I argue that STS needs to engage more directly with these debates and flesh out the value of different STS theories to exploring matters of data outside traditional STS empirical topics. Moreover, this requires locating and accessing the new multi-sited networks that enable and make up contemporary data practices. In theoretical terms, STS theories have to engage more directly with social science debate on power. Failing to do this risks STS being sidelined and demoted to a source of inspiration in the emerging field of data studies rather than a theoretical and empirical program of its own.

Anticipating uncertain futures: regional healthcare governance of COVID-19, *Jenske Bal, Erasmus University Rotterdam, Sabrina Rahmawan-Huizenga, Erasmus University Rotterdam*

In this study, we analyse the different ways in which regional networks responsible for acute care in the Netherlands have responded to uncertainty in relation to the Covid-19 pandemic. Mediated by (worst case) scenarios, predictions and prognoses, these responses result in different ways of anticipating the virus and illuminate different relationships with uncertainty, temporal logics and futurity. We consider two ways to anticipate potential futures: writing scenarios and modelling prognoses. These two practices, although intertwined, embody different temporal repertoires (van Asselt et al. 2007), making the future knowable and thus governable (Dolez et al. 2020). By considering the performative role of models and scenarios on healthcare governance, we analyse how different ways of anticipation are mediated, with important consequences for healthcare delivery. We show how regions have responded in different ways during the different 'waves' of the Covid-19 pandemic, suggesting different ways in which the future is enacted. The paper is based on a fully embedded ethnographic study of decision-making within the COVID-19 crisis, in three regional networks responsible for acute care in the Netherlands. The authors conducted non-participatory observations of crisis-meetings starting March 2020 and proceeding to this day, as well as semi-structured interviews with key actors.

Empirical ethics and surveillance. Dignity in care for people living with dementia, *Stinne Ballegaard, VIVE - The Danish Center for Social Science Research, Astrid Meyer & Anders Albrechtslund, Aarhus University*

In this presentation, we explore the contribution of empirical ethics to the field of surveillance. In particular, we discuss the concepts of dignity, privacy and safety in relation to the practices and particularities of good care for people living with dementia using surveillance technologies. The paper reports from a research project, LIVSTEGN, aimed at developing an ethical framework for the use of surveillance technologies in care for people with dementia and tendencies to wander. A premise for the project is the involvement of residents with dementia, relatives and staff in the process of identifying and handling practical and ethical challenges, as well as in the testing and investigation of surveillance technologies and workflows. To this end, the researchers engage in empirical and conceptual explorations of the care practices in a nursing home as well as participatory design based workshops with residents living with dementia, relatives and care workers. Thus, the discussion addresses issues of surveillance, privacy, safety, dignity and care that are matters of concern for the people engaged in dementia care. Through this discussion, we aim to develop better care for people with dementia, and contribute to how the STS community can understand and address these efforts.

Emergence and Stabilization of Performance Accounts for the Circular Economy - the Role of Representations, *Justyna Bekier, Copenhagen Business School, Andrea Beye & Cristiana Parisi, Copenhagen Business School*

This paper explores the role of representations in the emergence and stabilization of accounting technologies for circular economy, focusing on accounts designed to measure and evaluate performance of stakeholders in a large-scale innovation project. As circular economy is an inherently vague and subjective notion (Kirchherr et al. 2017), its implementation through multi-stakeholder projects is bound to face conflicts between their different values, goals and frames of action. An organization of such projects resembles what Stark (2009) dubbed heterarchy, characterized by differing evaluative principles, distributed authority and friction. This study of a Horizon 2020-funded innovation project follows, via ethnographic methods, the performance accounts 'in the making' (Chua 1995), before the system turns into a black box (Latour 1987). A key element in the development of accounts in this innovation project are the inscriptions that provide representation of the objectives, strategies, and activities of different project members. In this case, representations accommodate different understandings of circularity and logics of action, and allow them to coexist. Through an analysis of observational and textual data, supplemented with interviews, this study explores in further detail the role of representations in fabrication of accounts, investigating their potential 'compromising' role (Chenhall et al. 2013).

Harmonizing expectations, how path creating narratives affect technology, organizations, and society, *Marie Bemler, Stockholm School of Economics*

What happens to an organization when it becomes accountable to the future and has to live up to its own expectations? Self-driving vehicles is a new technology that should be found in the preformation phase as development has just begun (Sydow et al., 2009). However, as it has lived through its infamous hype-curve and expectations have been built up thought the sociotechnical system (Borup et al., 2006) how present is the awareness of social construction in actors of technology development (Bemler, 2020; Bemler & Engholm, 2019). My Ph.D. work focuses on how the actors' path creating activities inside the organization are affecting the temporal aspects of the future as it is handled in the present as well as in the past (Garud et al., 2010; Hassink et al., 2019; Steen, 2016). To answer the research problem narrative method (Boje, 2011) is used to understand the expectations created by the actors inside an organization developing self-driving technology and it's sociotechnical surroundings and how they relate to that through time. Preliminary results indicate inertia and path dependency from expectations of the future, created in the present.

Data as asset? The measurement, governance, and valuation of digital personal data by Big Tech, *Kean Birch, York University, Troy Cochrane, Callum Ard*

Policy discourse frames digital personal data as an economic resource underpinning the digital economy, positioning personal data as an important new asset class. Control over data assets seems to explain the emergence and dominance of so-called 'Big Tech' firms, consisting of Apple, Microsoft, Amazon, Google/Alphabet, and Facebook. These Big Tech firms are the largest firms in the world by market capitalization, a position that they retain despite growing policy and public condemnation – or 'techlash' – of their market power based on the monopoly control of personal data. Our aim in this paper is to analyse the assetization of personal data outlined in this policy discourse; that means examining how personal data is turned into an asset. We consider two key questions: what sort of asset is personal data? And how do Big Tech firms measure, govern, and value personal data as an asset? We analyse how personal data is accounted for, governed, and valued by Big Tech firms and other market players (e.g. financial analysts), outlining some of the contradictions and ambiguities in the assetization of personal data.

Bruno Latour in New Media Art, *Anders Blok, University of Copenhagen, Line Thorsen, University of Copenhagen*

As a philosopher and anthropologist of how the moderns' technologies partake to social life, Bruno Latour (b. 1947) has come to attain a twin importance to the domain of new media art writ large. On the one hand, Latour's non-modern philosophical project of de- and reconstructing established dual-isms of object and subject, nature and culture, technology and society, offer up valuable conceptual resources for theorizing the affordances of digital and other new media, within and outside of their artistic mediation. On the other hand, through his long-standing collaboration with Peter Weibel in curating several multimodal exhibition events at the Zentrum für Kunst und Medien (ZKM) in Karls-ruhe, Latour has himself become a topic of new media art-based investigation and critique. In this paper (/handbook chapter), we deploy this twin figure – Latour-the-philosopher, Latour-the-curator – to take stock of Latour's place in and importance to questions thrown up by the practice and theory of new media art. We do so in three main steps: first, how Latour-the-philosopher specifies the mandate of new media art; second, how Latour-the-curator facilitates representation at the recent Critical Zones exhibition; and third, how Latour-the-twin-figure may invite a certain de-modernizing of the notion of art, re-staging its future stakes.

Shifting temporalities in practicing sustainability: The renovations of the Million Program, Sweden, *Elena Bogdannova, University of Gothenburg, Linda Soneryd, University of Gothenburg*

We approach the contested issue of sustainable housing renovation by analysing the shifting temporalities involved. Empirically we focus on the renovation of housing estates built between 1965 and 1974 in Sweden, that was part of the national housing program known as

the Million Homes Program. This is an intricate process that is comprised of several parallel processes: the renovation itself, the consultations, and the negotiations. These processes are in fundamental respects kept apart. This asynchrony relates to time, people and places. However, social mobilisation and protest sometimes have the capacity to fuse these processes. In this paper, we focus on the practices of separation as well as situations of fusion. We discuss how sustainability is practiced in the light of this. We argue that different conceptualisations of sustainability are intimately connected to different temporalities that involved actors are deeply embedded in. On the basis of our interviews, field work and document studies we re-construct four parallel temporalities involved: chronological time, personal time, pragmatic time and process time.

The Promissory Economy of Internal Control, *Karen Boll, Copenhagen Business School*

This paper discusses internal control over taxation processes in large organizations. A challenge with developing internal control is that it is voluntary and requires heavy administrative work; therefore, the implementation of internal control is supported by a wealth of promises of what this may deliver in the future. The paper reports a case study of how large organizations develop internal control over their taxation processes. The paper is based on a total of 38 in-depth qualitative interviews that cover the three parties in the tax-triangle. This comprises 1) corporate tax directors, 2) external tax advisers and 3) tax administrators from the Danish tax authority. The paper shows that a wealth of promises drives the development of internal control. The paper argues that there is a specific promissory economy that enables engagement in the work with the internal controls. The concept of the promissory economy has been used to describe the bio-economy in the pharmaceutical industry and has been a topic in STS's approach to analyzing technoscientific capitalism. I argue that the concept is valuable to use in this context as it enables us to understand the changing chain of promises of what internal control can deliver to the different actors in tax-triangle, and how various forms of resources are invested in making the controls function. The study adds to the current debate about how implementation of new
accountability tools (such as internal control) is done on a basis of not yet realised future promises.

Democratic dialogue as socio-technological tool to overcome vaccine nationalism, *Marietjie Botes, University of Luxembourg,*

COVID-19 constitutes the biggest ever collective concern. To deal with this, pharmaceutical companies have pushed aside their competitiveness and patent interests to share valuable data and collaborate on the development of vaccines at an unprecedented speed. This was made possible through democratic dialogue built on trust and commitment to a collective goal. Regardless of the uncertainties that pandemics entail, this allowed for properly

considered decisions based on insights gained from one another's existing data. Unfortunately, the many political voices and influences in the debate about vaccine roll out only resulted in 'vaccine nationalism'. This debate was further complicated by the diverse range of people, institutions and countries which may only be resolved through open deliberation to generate new ethical perspectives. Citizens of constitutional democracies also demand a say in the finding of solutions to their socio-economic and health problems, including a democratic approach to science communication. The only way to save society from this global health emergency is through democratic dialogue on the highest political and international institutional levels, with participatory technological assessment through public engagement. The details of a socio-technological exercise during a catastrophic event requires a closer investigation into the interaction between science, technology, and public engagement.

Experiences and experiments with floods and/as urban futures, *Andreas Brandt, Aarhus University, Maja Hojer Bruun, Aarhus University*

With the proliferation of co-creative planning techniques, experts and planners increasingly transform local communities and infrastructures into urban living laboratories of datageneration and experimentation. Through different projects, citizens are drawn into these sites, often with a more or less explicit aim to change their behaviour. This paper examines the knowledge processes that were rendered visible through a test of a weather emergency app in Vejle, Denmark, where we employed interventionist ethnographic methods. We facilitated workshops, conducted semi-structured interviews with city officials, technology developers and citizens and were given tours around people's houses and communities. We sought not so much to intervene with the design of the prototype as to explore political and democratic dimensions of experimenting for climate resilience, and prompt mutual learning around the politics of floods in Vejle. In our discussion we draw particularly on Paul Rabinow's notion of adjacency. To be adjacent means to "intellectually stay in close proximity, not aiming for the authoritative precision of the specific, but rather seeking spaces of problems. Of questions. Of being behind or ahead. Belated or anticipatory. Reluctant. Audacious. Annoying". We discuss this mode of knowledge production as vital to an interventionist approach to engage the future as a collective concern.

Negotiating Sustainability in (Future) Agrifood Educations: A Praxiographic Case-study, *Laura Brandt Sørensen, Roskilde University, Stine Rosenlund Hansen & Niels Heine Kristensen, Roskilde University*

With this article, we will explore the sensitivity of sustainability in agrifood education, and its situated enactments. The aim is to investigate how sustainability comes into being, as well as out of being, and how assemblages are formed and constitute what sustainability "is" in higher agrifood education. The papers' analysis foregrounds an ontological choreography

that stages dynamic interactions of multiple human and nonhuman actors. The theoretical framework is grounded in Science and Technology Studies and methodologies within the scientific field of poststructuralism/posthumanism. With this paper, we will not present conclusions as finished descriptions, but present an epistemological fieldwork that through a non-dualistic approach presents sustainability as a multiple actor that goes beyond dominating dichotomies in agrifood education today. The case-study illustrates educational practices where sustainability is negotiated within a variety of dichotomies, scientific paradigms and individual values. The themes identified are; The local-global dichotomy; Right-wrong sustainability; Conflicting scientific paradigms; Care: emotional engagement, ethics and activism. This paper provides a theoretical and empirical perspective in educational practices where knowledge-making is situated and performed, and complex concepts are negotiated.

Responsible Research and Innovation at pandemic speed, *Anne Bremer, University of Bergen, Magdalena Wicher, University of Bergen*

This paper discusses how the COVID-19 pandemic is challenging us to rethink the field of Responsible Research and Innovation (RRI), and fits the conference theme 'STS in the time of a pandemic'. We question whether RRI is compatible and useful in situations like a pandemic, where issues related to contamination, vaccination, prioritisation, efficacy of measures and so on, are highly complex and politicised, knowledge is uncertain, and decisions are demanded to be taken urgently. Can we really hope to be 'inclusive', 'reflexive', 'anticipatory' and 'transparent' in a pandemic? And at the same time, the COVID-19 situation is revealing the critical ethical, social and legal concerns attached to the science. The authors will discuss how RRI looks like 'at speed'. In particular, they argue that the need for making explicit one's different roles (as a researcher, as a citizen, as an activist for instance) is heightened in situations of high complexity, uncertainty and emergency. They also discuss how theoretical perspectives developed by Funtowicz and Ravetz around 'post-normal science', and the literature stemming from Bourdieu's work can support those reflections, while ensuring that RRI remains aligned with its own principles.

Zooming in on Geoengineering - uncertain planetary futures and the ontological politics of the Anthropocene, *António Carvalho, University of Coimbra, Mariana Riquito, University of Coimbra*

Geoengineering techniques, in particular solar radiation management (SRM) and carbon dioxide removal (CDR), have been proposed as potential solutions to tackle climate change in case mitigation and adaptation measures fail. Current scholarship on the Anthropocene often portrays Geoegineering as extractivism by other means, entwined with hypermodern utopias to enhance control over planetary systems. Public engagement with Geoengineering has involved a wide range of publics in the discussion of these technologies over the past 10

years. Our presentation stems from six online focus groups on Geoengineering organized in Coimbra, Portugal, in December 2020. While recognizing that these techniques could pose various social, political, moral, environmental and health risks, participants also emphasized that the most controversial applications were still in the making, thus rendering the task of regulating – and even defining – Geoengineering particularly challenging. We suggest that this "uncertainty" turned Geoengineering into an opportunity to discuss the ontological politics of the Anthropocene, including the technological mediation of what can be constituted as a "matter of concern". Our talk will examine how Geoengineering publics are inevitably entangled with assemblages of participation, including the role of STSers, software and situationalities in the emergence of concerned citizens.

Chasing technology in the public healthcare and social service organization: Professionals' coping strategies when working with technologies in-the-making, *Marta Choroszewicz, University of Eastern Finland*

Considerable efforts and resources have been invested in data-driven technologies and digital leap for workforce working and delivery of patient work in public healthcare and social service organizations in Finland. Covid-19 has only accelerated the adoption of remote work solutions for workforce. Many of these technologies are in constant development and appropriation to meet the future needs of healthcare and social work, yet they are often also mandatory to use for current professionals. We examine how continuous development, implementation and usage of technologies in-the-making impact on professionals' work in public healthcare and social service organization. The article is based on two year ethnographic study conducted in the Finnish regional public organization. The results capture the complex reality of everyday work in public organization where professionals' are told to chase technological innovation to make their work more efficient and effective. The study also provides insights into the professionals' coping strategies when they are forced to work with technologies in-the-making. When these technologies fail to work properly, professionals have to develop various strategies enabling them to conduct their work despite of failing technologies. We suggest that better understanding of challenges and professionals' responses to working with technologies in-the-making enhances successful implementation of technologies.

AI in the time of crisis: priorities, possibilities and imagined futures, *Jenn Chubb, University of York*

The role of technology can affect the way we view the social world and our ability to imagine futures within it. Indeed, some claim that technology has the capacity to shift the ground from which the imagination is exercised and that this is crucial in how possibilities and future limits are viewed (Simmel, 2010). There is the chance that now is such a time where multiple crises and social upheaval give rise to new narratives and ideas as to what might be

possible for AI futures. In this paper, we will present the inductive analysis of (n=25) thought leaders and scholars in AI and AI Futures conducted during the COVID-19 pandemic 2020, which points to a similar view: that crisis could impact upon both the construction and the imaginaries of AI Futures. In this article we explore the possibilities and priorities for AI as well as the imagined futures of those working in related fields. We broadly draw upon the particularities of the moment in which the research was conducted to think about how a shifting present creates a changing sense of the technological future - we argue that this is particularly pronounced in the case of AI.

Where climate futures are made: into the machinery of mitigation pathways production, *Béatrice Cointe, University of Oslo*

Discussions on climate change almost invariably involve futures. These futures, which are increasingly mapped out and scrutinized, take the predominant form of 'pathways' to more or less warmer futures depending on the evolution of greenhouse gas emissions over the next century. Most of the time we encounter these as graphs, but they are in fact complex sets of interrelated numerical variables produced by models and collected in databases. This presentation delves into the machinery behind the production of these pathways to understand how it shapes the climate futures we live and think with. In the past few decades, this infrastructure has grown more sophisticated as research communities have tackled the ambition to integrate environmental, economic, and technical knowledge in a 'policyrelevant' way that could guide climate decision-making. Concurrently, growing discrepancies between the modelled futures and our actual present fuel controversies on the pathways themselves but also on the hypotheses, worldviews and tools that support their production – the debates around negative emissions being perhaps the most salient example. Drawing on an analysis of scenario databases, research project documents, conference proceedings and research practices, this presentation re-interprets such controversies in the light of theconcrete infrastructure and epistemic culture of pathway-production.

Climate science in numbers: Carbon governance, mathematical relations and transitions targets, *Francesco Colona, Linköping University*

Like many arenas of science-policy interface, carbon governance is shaped by quantification processes. Here numbers are often finite quantities and – in mathematical jargon – absolute values. Their aim is to influence policy by numerically describing more or less sustainable alternative futures. For instance, the 2018 policy summary of the report of the Intergovernmental Panel on Climate Change stresses the importance of keeping global warming below 1.5 degree centigrade compared to pre-industrial levels, assuming it as an absolute and specific measure of success in avoiding irreversible and catastrophic climatic change. Similarly, the effectiveness of Carbon Capture and Storage technologies is often

measured by the absolute number of kilotons of carbon that they are able to capture and permanently keep from the atmosphere. In contrast, ClimateView, a Swedish company providing services to plan and visualize the shifts necessary to address the climate crisis, suggests that numbers in carbon governance practices are effective and relevant only as they enact relations – not absolute values – between carbon indicators, or between hypothesized carbon emissions and specific policies. I intervene in recent STS debates on quantification and numbers and show how climate adaptation policymaking is facilitated by approaching numbers as tools that are primarily capable of establishing relations.

Building Digital Bridges with Elderly: Open Challenges Related to Covid-19, *Laura Corti, University Campus Bio-Medico of Rome*

In the contemporary world, the future of relationships is strongly characterized by technology, such as, for example, computers, smartphones. Specifically, the pandemic situation we are experiencing has brought out the need to consider technology as an intergenerational communicative tool. During Covid-19, this happens in order to protect the health condition of older people by changing the relationship from direct to virtual contact, mediated by technological devices. The objective of this contribution is to present the results of a survey carried out in Italy on the transformation of the relationship with people older than 70 years old during the first pandemic phase (March-July 2020). The survey included a questionnaire designed to identify habit change in dealing with older people and, specifically, the use of digital resources in communication with the elderly during the pandemic emergency. The analysis of the questionnaire results showed the significant impact of Covid in relating to the elderly, highlighting how technology has been an essential resource to increase and reshape the possibilities of direct meeting. From this data, then, I will discuss, from a philosophical point of view, whether the pandemic has accentuated a slow digital transition for older adults and what impact this transformation has.

Freediving, heroism and matters of concern, *Anne Marie Dahler, University College Lillebaelt*

Sport studies is a new field to incorporate ANT (Kerr 2016). In doing so, the role of technology, performance enhancements, and how the sporting body constitutes a socio-technical assemblage have been highlighted. To further this agenda, we ask how sport might be considered a care practice, not only of caring for oneself but also caring for the world - a relational practice where natural elements affect the body. To outline this suggestion, we address the case of freediving, a rapidly growing sport whose success is related to the hybrid of extreme sport, bodily control, meditative practices, feeling connected and affected to the ocean and oftentimes also environmental concern and concern for species of the sea. In this paper, we focus on the freedive as an act of connecting and being concerned as the freediving body and the ocean co-constitute relationally as the

body is transformed when submerged deep into the sea. With Haraway's notion of tentacular thinking we look into the specificities of freedivers' practices to discuss how freediving constitutes a contemporary way of connecting with and being concerned for the world where the sporting hero simultaneously becomes a transformed, affected and surrendered apprentice in the underwater world.

Precision Patients: Selection practices and moral pathfinding in experimental oncology, *Mie Seest Dam, Sara Green, Ivana Bogicevic, Line Hillersdal og Mette N. Svendsen, University of Copenhagen*

This paper addresses selection practices in a Danish phase 1 unit specialized in precision medicine in the field of oncology. Where precision medicine holds the ambition of selecting genetically fit medicine for the patient, we find that precision medicine in the early trial setting is oriented towards selecting clinically and genetically fit patients for available treatment protocols. Investigating how phase 1 oncologists experience and respond to the moral challenges of selecting patients for early clinical trials, we show that inclusion criteria and patient categories are not always transparent to the patients. Yet drawing on the anthropology of 'unknowing,' we argue that silence and non-transparency in interactions between oncologists and patients are crucial to respect the moral agency of patients at the edge of life and recognize them as belonging to the public of Danish healthcare. In the discussion, we consider the practice of placing "unfit" patients on a waiting list for trial participation. Rather than representing a political problem, we argue, the waiting list acts as a valve enabling oncologists to navigate the scientific as well as the moral uncertainties in phase 1 oncology.

Experimenting with worlds *Peter Danholt, Aarhus University*

At the heart of many approaches in the fields of STS, design and participatory research are mutual engagement and involvement with others. Follow the actors, mutual learning, ecologies of practice are some of the famous credos of this concern. Engagement and participation arguably presume some sort of shared ontology or worlds with those that we engage with and undoubtedly, we do share ontologies. But which ontologies or worlds do we in fact share or how might we explore and experiment with what is shared and what is not? Inspired by recent work in STS and social anthropology and specifically and among others the work of Eduardo Viveiros de Castro, Marilyn Strathern, Jon Bialecki and Bruno Latour, I wish to discuss how we can think and practice participation and engagement as 'experimenting with worlds'. For instance, inspired by de Castro and his amerindian ontology, we could propose that instead of researchers and participants having different practices, but share what 'technology', 'workshop' and 'post-it' is, we might inversely propose that we share the same practice, namely 'work to accomplish something', but what 'technology', 'workshop' and 'post-it' is, are entirely different things for the parties involved.

Fictional matters of concern: Human/nonhuman assemblages in times of catastrophe, *Christian De Cock, Copenhagen Business School, Damian O'Doherty, The University of Manchester*

In our paper we aim to develop new ways of conceiving how the human is thrown in the midst of the material world – a more-than-human world that is entanglingly alive – and re-imagine our own state of being. This requires a re-storying of human/nonhuman relations and our means of doing so on this occasion will be Richard Powers' (2018) novel The Overstory and the novella length prose-poem Ness by Robert MacFarlane and Stanley Donwood (2019). Instead of clinging to the old fiction/reality dichotomy, we follow Iser (1993: xv) in conceiving of "the fictive as an operational mode of consciousness that makes inroads into existing versions of the world… as a result, the fictive simultaneously disrupts and doubles the referential world". Fiction outstrips the determinacy of the real which can weigh so heavily on us, whilst providing the imaginary (in this case of human/nonhuman relations) with the determinacy that it would not otherwise possess so that it can intrude into and act upon the given world. Ness is described by MacFarlane as a retelling of Sir Gawain and the Green Knight for the Anthropocene. The setting is Orford Ness, a site populated with modern ruins we have explored elsewhere (De Cock and O'Doherty, 2017: 137-140) and which in a previous existence (until the 1970s) functioned as a test site for experiments in radar, defence systems, bombs and atomic weapons. It is now a nature reserve but monuments to its violent past are strewn across the bleak landscape. In Ness, a brutal male figure called The Armourer – echoing male autocrats currently occupying seats of power – is leading a nuclear ritual in the Green Chapel with an intended catastrophic outcome, and serves as allegory for the living world's systemic annihilation. Converging on the chapel are five more-than-human beings – she, he, it, they, as – coming to stop him and which are all poetically described in their individual sections by the authors. Through them, we are offered an optic through which we see nature come alive in its own right, with its own powers. This is an imaginary that acknowledges life beyond our species, probing the relationship between the human and nonhuman. The Overstory also poses a challenge to the sense of exceptionalism humans carry around, respecting only things insofar as they resemble human experience and characteristics. As Powers put it in an interview (Powers and Hammer, 2018): "It's the story of immense, long-lived creatures… It's about immensely social beings with memory and agency"; in other words, it is a novel about our kinship with trees. The Overstory tells the story of nine human beings who come to take trees seriously. Whilst trees still play only largely supporting roles, Powers initiates a re-storying where people lose themselves and their private narratives in an assemblage that extends far beyond their species. Just like Ness, this novel is concerned with the consequences of when there is no other authority but human mastery and might. This is of course the fantasy of control that is still our dominant reality to this day, even though our artificially created social world is starting to come apart at the seams. Our authors in their various unique ways create

fictional devices that aim to give gestalt to alternative imaginaries of what is reasonable and possible, and thus adumbrate what the future as a matter of collective concern, beyond the human certainty that so blinds to what is actually happening in front of us, might look like.

"Close but not too close": experiences of bridging science and policy from three international advisory organizations, *Matteo De Donà, University of Gothenburg, Sebastian Linke, University of Gothenburg*

To make the best use of science for environmental decision-making is today a core concern for governing towards more sustainable futures. This then calls for an improved understanding of the concrete challenges of scientific advice to inform environmental policies and regulations. In this respect, questions about institutional design become crucial: policy relevant science is trapped in the dilemma to be close to policy and politics while at the same time trying to not become too close to avoid overly politicization. In this paper we investigate this dilemma of advisory science – to be "close but not too close" to policy and politics. We focus on three international scientific advisory organizations: the International Council for the Exploration of the Sea (ICES), the Intergovernmental Panel for Climate Change (IPCC) and the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES). Comparing the policy areas of marine, climate and biodiversity governance, we aim to elucidate how the interface between science and policy is understood and arranged in the institutional designs of these international bodies and how it may be improved. While all three organizations are through their mandate policy relevant, they commonly aim to not be policy prescriptive and provide a neutral space for scientific work that is not, or as little as possible, impacted by political influence. Our analysis reveals key differences of science-policy interactions between IPCC, IPBES and ICES with regard to four issues: their mandate, the separation of science and policy, the politicization of advisory science and how non-scientific knowledge is used. We discuss how the four issues reveal different challenges connected to the dilemma of proximity vs. distance of science and policy in these organizations and explore possible improvements of this relation.

Experiencing privacy: Digitalization of the private sphere during lockdown, *Katja De Neergaard, IT University of Copenhagen*

During the Covid-19 pandemic, the digitalization of the home transformed experiences in and of the private sphere. Taking a point of departure in the lockdown in Denmark from March to June 2020, this paper explores the effects of increased use of digital technologies for everyday tasks and socialization, on how privacy was experienced and contested in practice. Empirically, the paper is based on interviews and observations generated as part of the project 'The Grammar of Participation'. The paper shows that the influence of digital technologies on the home reach far beyond their roles as tools - they transport areas of public life into the home and continue to shape this space even when they are turned off. In

analyzing this process, the paper finds that new privacy practices and social norms emerge. This has implications for the conditions for privacy. The paper discusses how the combined experience of the lockdown and increased digitalization, brings attention to privacy as a complex relationship between the materiality of the home, digital technologies and the individual experience of being (dis)connected. Thereby, the paper contributes to ongoing privacy debates by considering multiple and more subtle dimensions of privacy in future digital societies.

Digital transformation of work: Where do designers find meaning in online crowdwork platforms?, *Irem Dilek, Middle East Technical University, Pinar Kaygan, Middle East Technical University*

Over the past decade the world of work has been experiencing the digital transformation. Integrating the digital processes and tools into business models, digital transformation has led to the shift in the traditional business structures, hierarchies, relations, and the workplace. More recently, this transformation has accelerated since remote work is becoming the norm for many areas of business under the global pandemic. This research focuses on a professional group, designers, who have increasingly preferred to work on online crowdwork platforms as a digital work form in recent years. Drawing on in-depth interviews with design professionals, this research explores what constitutes meaningful work for the designers on crowdwork platforms. Regarding their experiences on the platforms, our analysis will discuss meaningful work for designers on online crowdwork platforms with respect to three issues, which are (1) autonomy, (2) competence, and (3) relatedness. In our analysis we will focus on how designers' experiences has changed in these digital work settings compared to traditional design practices in physical environments.

Procedural Care: Licensing Practices in Animal Research, *Tone Druglitrø, University of Oslo*

This paper provides insight into the entangled and flexible, yet tensed relations between techniques of governance, accountability and care in animal research. A consistent critique against animal research has been a lack of openness and transparency. In the recent decade, this concern has increasingly become integrated in practices of licensing animal research. In Norway, which forms the empirical site of this paper, the licensing system has undergone significant revisions drawing closely upon EU directives. A central aim is to 'foster a culture of care'. In a Norwegian context, this means that in order to facilitate animal research scientists and public officials must mobilize a set of politico-legal devices such as harm-benefit analysis. This device responds to different ethical concerns that cuts across science, society and the regulatory system, and work as tools of accountability and transparency. The paper concludes that the licensing system for animal research forms a specific genre of care – procedural care – that holds promise and potential for bringing

together and more openly engaging with care(s) in conflict. A main aim in the paper is to demonstrate the potential of "care" as an analytical concept in STS to study ethical-political conflicts in and across bureaucracy, science, and culture.

E-biking as social practice – the emergence of a new travel routine?, *Karin Edberg, Linköping University*

Electrically assisted cycling (e-biking) is a growing phenomenon globally. It thus constitutes a relevant starting point to analyze challenges and opportunities included in the transition towards a sustainable transport system. To analyse how travel practices change, dominating practices evolve and alternative strategies are adopted are not the least relevant during times of crises such as the Covid-19 pandemic. By analysing diaries written by e-bikers as well as policy documents and interview material with policymakers, interest organisations and cycle vendors, the emergence, transformation and stabilisation of everyday travel routines are investigated in this paper. The analysis embraces what kind of practice e-biking is, including what constitutive elements it consists of and how e-bikers are recruited – and why some groups are excluded. Aspects of predictability, reliability and routine, but also of flexibility, autonomy, comfort and environment, were found salient for the ideal travel. Many of these aspects have for long been analogue with car driving, explaining its dominance. One interesting finding is that e-biking to a large degree can be categorised by the same aspects. It is therefore relevant to relate e-biking to other modes of personal transportation, and to discuss if e-biking has the power to challenge the system of automobility.

Predictive analytics and the socio-technical defuturization of the future, *Simon Egbert, Technische Universität Berlin*

Predictive analytics is becoming a decisive factor in more and more areas of society when it comes to decision-making, evaluation processes or classification practices. Be it recommender systems in online retailing or social media, prediction-based policing, or credit rating – everywhere statistically-based procedures are used to analyse the largest possible volumes of data for patterns of correlation (Kaufmann et al. 2019; Nassehi 2019: 44, 148). This at times culminates in the assumption that we will soon be living in a "predictive society" (Davenport 2016:xix). Following this observation and in continuation of my empirical-technographic work on predictive policing, in my paper I will reconstruct to what extent algorithmically mediatized prediction can be spelled out as sociotechnically constituted "distributed action" (Rammert 2016: 148) and which actors and actants are involved in it. In addition, as I aim to focus particularly on the knowledge dimension of predictive analyses, I will describe the concept of "human-technical cognitive assemblages" (Hayles 2017: 3). The "defuturization" (Luhmann 1990: 130) of the future via predictive analytics, as will become clear, is a genuinely socio-technical processing concatenation of numerous and diverse intermediate operations which are sometimes machine-dominated

and sometimes human-dominated. Concepts and instruments from science and technology research are therefore indispensable for adequately analyzing the forms and consequences of the digitalization of society.

Curating a written Exhibition about the Tacit Dimensions of Design, *Stefanie Egger, FH Joanneum, Institute Design &. Communication, Christian Lepenik, FH Joanneum, Institute Design &. Communication*

Most of the countless interactions with physical objects that happen every day don't surface in our conscious awareness. Brushing teeth, making a phone call, washing hands, driving a car, riding a bicycle, working on a computer, writing texts – most of the time the user knows what she is expected to do with certain objects, she can read the Affordances (Norman 1988, Gibson 1973) in her surroundings. In the upcoming book “Stummes Wissen” (2021) I will discuss the possibilities for and responsibilities of designers, who are able to design that type of communication, the process of “Translation“ (Latour). How is knowledge “distributed“ between objects and users? 19 interviews with designers were complemented with collected observations – short videos and photos of everyday interactions that would help me discuss certain aspects of the phenomenon under investigation. In the end, all the material was once more revisited and processed into the shape of a virtual exhibition enabling me to convey my findings and allowing for further insights. This exhibition as a method will be the subject of this talk because it could add to the instrumentarium STS scholars use for reflecting upon their work as well as making it beautifully accessible.

Looking through glass to explore reach in new building designs, *Maria Eidenskog, Linköping University, Wiktoria Glad, Linköping University*

Everyday practices are framed by the design of the built environment of homes. This paper explores how quieter registers of power (Allen, 2016) are enacted through the use of glass as building material and its connections to regulations, policies, political ambitions, and architectural trends. The concepts of topological reach and ontological politics are combined to put residents’ everyday practices in focus and to develop a close connection between practice in homes, building design, and actors with the ability to affect the construction industry. Topological reach will contribute to STS theories by connecting distant actors and agendas to the everyday life in homes and frame how distant proximities of power are entwined with design of homes and thus make visible the ontological politics and built-in matters of concern. This paper focus on the reach of the sustainability agenda into the everyday practices and how different versions of reach enact ontological politics in ways which create unequal access to shared spaces, homes, and sustainable housing. In our case, the quieter registers of power is a matter of concern for future homes as it is marketed as the city district of the future and a role model for sustainable living.

How the pandemic changed our meeting culture, *Torben Elgaard Jensen, Aalborg University*

In the Corona lock-downs periods of 2020, our established meeting practices were suddenly challenged as millions of people quickly had to move their work meetings to online platforms like Zoom and Teams. In this paper, I begin by exploring a series of everyday accounts of how the practice and the experience of meetings changed with the sudden move to online platforms. Building on this, I discuss what theoretical resources and perspectives we might engage with if we want to turn 'meeting practices' or 'meeting culture' into an object of STS research. Empirically, the presentation draws on an archive of ethnographic interviews that were conducted during the first Danish lock-down period. Theoretically, it draws on a diverse selection of resources including a historical account of the development of meeting manners in Western civilization.

Why not side hustle? Fashion reselling on digital labour platforms, *Niccola Ens, Copenhagen Business School, Attila Marton, Copenhagen Business School*

Digital labour platforms introduce potential labour moments into the stream of everyday activity, thereby commodifying free time. Such platforms are strategically designed to foster these practices, embracing digital technology to defuse tasks across a wide range of actors, times and contexts. Much of the extent literature on digital labour platforms is rooted in management science, focused in two overarching streams. The first treats platforms from a strategic perspective, and is focused on optimized matching, governance of participants and strategies to maximize scale. The second, investigates these developments as new forms of work, critiquing the new precariat that is on the rise in an Uberized world. While these are worthy pursuits, both of these perspectives have a tendency to truncate these labour patterns from their wider historical developments, failing to holistically capture their dynamics. We instead draw on in-depth ethnographic study of a fashion reselling platform located in the United States, proposing that the platform is an adaptation of multi-level marketing (MLM) organizations, who commodify the lifeworld of their primarily female participants. By situating this 'digital hustle', we illustrate the pathologies of such a work system, revealing the cycle through which the modularization of labour creates dependencies, which are then filled through increasingly modularized labour moments, leading to greater dependencies, and so on and so forth. Thus, we take up a precise STS issue of future concern, the changing nature of work, and the exploitive role labour platforms play in its pervasion into all aspects of the lifeworld.

Epistemic value of care(less) practices: From birds in the hand to data in the bank, *Selen Eren, University of Groningen, Anne Beauliue, University of Groningen*

More-than-human relationships in ecology are at the core of knowledge production about bird migration and potential future survival. We use a lens of 'care' to analyse how birds and

ecologists form affective and material entanglements when they meet in the field to produce knowledge. Specifically, we look at how encounters (such as holding and manipulating birds) shape the data that is collected and how demands of knowledge infrastructures also shape encounters. In this paper, we present empirical data we have been collecting during our collaboration with the global flyway ecology group based in the University of Groningen. By studying complex interactions, we make explicit how birds, bands, humans, trackers, landscapes and data sets in sociotechnical infrastructures become entwined and how this relationship requires maintenance and other care work. The paper puts two bodies of work in dialogue: (1) the feminist literature committed to the epistemic value of care practices in research (Fraser & Puwar 2008; Despret 2004, 2013; Latimer & Miele 2013; Puig de la Bellacasa 2011; Latimer & Lopez Gomez 2019; Friese 2013, 2019); and (2) the STS literature that lays the ground for interventionist discussions around knowledge and data infrastructures (Edwards et al., 2013; Baker & Karasti 2018).

Addressing the challenge of climate change: Findings from a literature review on public mistrust, *Antoinette Fage-Butler, Aarhus University, Loni Ledderer and Kristian Hvidtfelt Nielsen, Aarhus University*

Climate change is widely considered humanity's greatest concern. While it is recognized that trust should not be placed indiscriminately, there is widespread concern in academic circles about decreasing public trust in scientific expertise. Our aim with this paper is to characterize research findings relating to public mistrust of climate science. To address our research aim, we applied the methodology of the systematic meta-narrative literature review to investigate the narratives and findings across disciplinary fields. Covidence software supported our initial reviewing of the 352 articles identified in databases. 54 academic articles met our inclusion criteria, spanning multiple disciplines within the social sciences and humanities. The findings of the articles relating to mistrust included: 1) Identifying psychological mechanisms behind mistrust of climate science, 2) understanding sociocultural factors motivating mistrust of climate science, 3) improving science education, 4) improving communication between climate scientists and the public, and 5) facilitating greater public participation. The findings demonstrate the explanatory and normative thrust of broad academic engagement with the future collective concern of climate change, a topic that is often explored within STS research.

When novelty needs nostalgia: 21st century rhetorics in science and policy, *Tim Flink, Humboldt-University of Berlin, Martin Rienhart & Cornelia Schendzielorz, Humboldt-University of Berlin*

In recent years, science studies and adjacent fields have shown a recurring interest in studying language concepts (Daston 2009; Bensaude-Vincent 2014; Kaldewey and Schauz 2018). Not only because concepts offer insights about how actors perform boundaring and

tailoring work vis-à-vis other actors within the science system and at the intersection of science and society, most notably politics (Gieryn 1983; Calvert 2004; Calvert 2006). But also because they shape social expectations and mould into the fabric of individual as well as organizational identity work (e.g. Lindvig and Hillersdal 2019). The first two decades of the 21st century have seen an enormous rise of new concepts that bestow several new properties on the discursive postulations as to how science and politics should be interacting (Flink and Kaldewey 2018; Flink and Peter 2018). Grand challenges, responsible research and innovation, excellence, frontier research, science diplomacy, and translational research, open and citizen science, or mission-oriented research, to name a few, share strikingly common features. It is not only that these concepts do the obvious, i.e. they express and call for reforms of the science system. It is also that they differ from a traditional understanding (e.g. the social contract for science and linear model of innovation thinking) of a stable relation, in which science (and its main actors), as being distanced and shielded from society, would enjoy the privilege of self-regulation, guaranteed by politics, in exchange of knowledge and education (Guston 2000). Rather, these new concepts epitomize and require an affirmative commitment of scientific actors to solve societal challenges together with societal actors up to the level of functional-systemic conflation, while at the same time they concur with ideas of competitions stemming from sports and market economy. In addition, all of these concepts, so it seems, accommodate demands for different valuation practices, most notably in order to justify activities vis-à-vis an allegedly engaged public and in light of societal mediatisation. In addition, these new concepts seem to proliferate across national borders, and all of them have been strongly endorsed by the European Commission's research policy, i.e. the funding of its Framework Programmes. But most strikingly, none of these new concepts – whilst arguing for change – is actually novel. Quite the contrary, we will illustrate that most concepts explicitly build upon nostalgic imaginations of allegedly glorious times by what can be called a rhetorical technique of vintage modifying or vintage reissuing. While it is common ground that different forms of quotidian nostalgia, such as "commercial nostalgia", "ersatz nostalgia" and "armchair nostalgia" (Appadurai 1996; Dika 2003; Spengler 2009) or "retrotopia" (Bauman 2019) revoke or sustain the allegedly positive aspects of the past, as they constitute societal responses to contemporary life with all of its boredom, mediocracy and ephemerality, the question is what function nostalgia has at the intersection of science and policy, and most notably to actors that conceive themselves per excellence as pacemakers and warrantors of change. Finally, this contribution will critically ask if the scholarly engagement of STS and of research/innovation policy have not reached a state of finalization, in the sense that its main academic occupation has turned to stabilizing these concepts by provision of analyses that actually affirmatively support political decision-making.

Overflowing Knowledge Mandates: Reconfiguring Socio-Technical Systems of Preparedness Expertise in Denmark, Norway, and Sweden during COVID-19, *Søren Frandsen, Copenhagen Business School, Jakob Laage-Thomsen, Copenhagen Business School*

Denmark, Norway, and Sweden responded differently to the COVID-19 pandemic despite similar universal health care models, corporatist traditions, and pandemic preparedness systems. These divergences were not clearly attributable to differences in health emergency advice from health authorities nor traditional channels of crisis management. Rather, the different measures introduced in March 2020 in the three countries were, in part, the result of varying degrees of political overruling of the established expert authorities responsible for pandemic preparedness. As a socio-technical system of expertise, preparedness revolves around how societies best prepare and handle future crises to mitigate their consequences. In the COVID-19 crisis, governments in all three countries, to varying degrees, challenged existing ways of organizing these socio-technical systems and began reconstructing them, administratively and in terms of expertise. This paper explores these changes by examining how governments in Denmark, Norway, and Sweden are currently reconstructing pandemic preparedness expertise and advice systems during and in response to the COVID-19 pandemic. Drawing on primary reports from government commissions, legislative processes, and a cross-national expert survey of 250 experts across a number of disciplines, we place this prepandemic socio-technical system of expertise in a historic context, and discuss its on-going continuities and transformations during the COVID-19 pandemic.

Plant-human futures: socio-technical inter-species collectives with bio-electrical sensing technology, *Raune Frankjaer, Aarhus University, Line Kofoed Hansen, Aarhus University*

The pressing ecological crisis necessitates a radical reassessment and reconfiguration of the human relationship to the planet. Presently dominant anthropocentric ontology asserts humans as superior to and separated from, the other entities, which make up our life-world. In spite of the vital importance of plants as creators and upholders of a livable planet, vegetation inparticular is perceived as a passive resource to be exploited. Yet findings from plant science reveals plants to possess a high degree of sentience, remarkable processing and communication skills, learning abilities as well as an astonishing level of awareness of themselves, their kin and wider environment. However, to humans the rich life-world of plants remains hidden, mainly due to the sessile nature and vastly different temporality signifying plant existence. In line with the conference theme “the future as a matter of collective concern” this paper introduces the application of bio-electrical sensing technology within a posthumanist and nonanthropocentric framework, as a socio-technical attempt to bridge the experiential gap between humans and plants, hence providing a starting point for exploration and discussion of the nature of plant sentience, nonhuman participation and definitions of a public stakeholder in a more-thanhuman world.

Artistic citizen engagement for Responsible Research and Innovation (RRI) in smart city Amsterdam, *Aafke Fraaije, Vrije Universiteit Amsterdam, Marjoleine van der Meij & Frank Kupper, Vrije Universiteit Amsterdam*

The future city is increasingly imagined as governed with smart technology and big data. This raises concerns regarding a.o. privacy & security, solutionism and corporatization. To help cities steer towards a more equitable future, citizens should be engaged to support the dimensions of responsible research and innovation (RRI): inclusion of diverse perspectives, reflection on values and assumptions, anticipation of possible futures and responding to these emerging insights. Art can potentially help to achieve RRI by drawing in wider audiences, triggering reflection and exploring issues. We aimed to examine the potential of art-based citizen engagement for RRI by evaluating a case in self-proclaimed 'smart city' Amsterdam. The project aimed to explore smart city concerns with a wide audience and make an explicit connection to technological trajectories by involving smart city professionals. The project consisted of street theater, playful group conversations in community centers and a theatrical dialogue between citizens and professionals. The preliminary results indicate that notably diverse citizens participated and successfully explored what the smart city could mean for them. The activities partially unpacked what was at stake, but also accidentally reinforced the dominant smart city narrative. In terms of responsiveness, the project mediated the relationship between citizens and professionals.

Conceptualising and school-ling technology education in the case of 'teknologiforståelse'
Simy Gahoonia, IT University of Copenhagen

Technology education is at the core of today's concern for the future, as educational matters often are. In Denmark, a novel school subject, Technology Comprehension (teknologiforståelse), is being introduced experimentally to compulsory schooling in an effort to give students analytical and creative-constructive abilities, enabling them to participate in an increasingly digital society, now and in the future. In this paper, I share and discuss preliminary findings from ongoing empirical research into how schoolteachers plan, teach and otherwise engage with Technology Comprehension in their everyday practices. As Technology Comprehension is being trialled in schools, I observe various conceptualisations of desired digital practice and educational engagements with digital technology being imagined, assembled and negotiated. I discuss accounts of how the experimental work and concerns of schoolteachers enact certain understandings of technology education. Using a material-semiotic approach, I discuss how educational engagement and desired digital practice are in part conceptualised through the schoolteachers' problematisation of these forms as belonging in the conceptual spaces of 'inside' and/or 'outside' of school. The boundary between these spaces is blurred, contradictory and contested. However, in the everyday enactment of it, a situated conception of what it means to understand, and thereby live well with, technology is done.

Expectations and Expertise: can Science and Technology Studies (STS) and Artificial Intelligence (AI) learn and benefit from each other?, *Vassilis Galanos, University of Edinburgh*

During my doctoral research, investigating empirically and historically the interplay of expectations and expertise in the hype cycles of artificial intelligence (AI), I encountered the following research obstacle: conducting early literature review on the aforementioned topics, instead of STS articles investigating the social role of promise and legitimacy in shaping AI, scholarly search engines I used (ironically, AI-powered) returned technical articles about predictive software systems or knowledge-based expert systems. Often, articles about expert systems involved the question of prediction (as in medical diagnosis), which allowed me to reflect on the interplay between expertise and expectation, and how the problem of legitimacy influences not only decision making but also foresight strategies. Therefore, I came to observe patterns of similarity between the discipline I investigated (AI) and the discipline through which I investigated (STS). In this first public presentation of this observation, by focusing on the cognitive objects of "expertise" and "expectation," I suggest that the contemporary maturity of AI and STS, reveals a common aim at apprehension and coding of knowledge structures; the former by the use of symbolic representations and statistical reasoning, and the latter by devising metaphors and narratives, inviting a novel alliance between the technical and the social.

Datafication of police work: unboxing the contested social practice of public surveillance, *Vasilis Galis, IT University of Copenhagen*

Digital and data analytics tools are increasingly being used in police work both for monitoring, preventing, investigating, and predicting violations of law, disorder, and insecurity. The development, regulation, and implementation of these tools bring along a plethora of matters of concern regarding their social, ethical, and legal implications. While primarily portrayed as a way to boost the efficiency of police work and to improve public safety, these tools may give ground to various types of social biases, undermine individual freedoms, and lead to excessive criminalisation of society. Using examples of digital and datafied law enforcement tools at different stages of implementation for use in police work in Denmark, Norway, Sweden, Latvia, Estonia, and the United Kingdom, spanning from migration to traffic control, and from facial recognition to automated data analytics, thise paper aims to identify the cross-cutting issues highlighted by these cases by looking at public surveillance as a deeply sociotechnical practice. We approach this by critically exploring the following elements: inclusivity of agents and objects of surveillance; demarcation of spaces of surveillance; (co)production of knowledge; (re)definitions of public and private space; shifting human and non-human agency and patterns of authority; diversity of agentive experiences of, and responses to, surveillance.

Designing the social: STS and the anthropologist as (if a) designer - towards inventive modes of knowledge, *Andrea Gaspar, University of Coimbra*

My presentation draws on some of the recent epistemic debates in STS and anthropology for discussing the possibility of producing anthropological empirical knowledge through design. Focusing particularly on the recent turn to design in anthropology, I discuss the possibility of an anthropology that is not just critical of design, collaborative with design, or applied for design, but rather anthropology through and sometimes as design. Drawing on examples of my own practice as an anthropologist playing as if a designer in two research and pedagogic situations, the question I raise is what happens if we substitute the figure of the participant observer for the figure of the designer, as well as substituting ethnographic texts for material practices and devices. Common to these situations is the use of practical instructions as instructions for improvise, and an attempt to produce effects of some sort. Its experimental character is related to the lack of control (Calvillo 2018) on the part of the anthropologist. This is an anthropology that does not merely want to intervene in the social (Estalella & Criado 2018) but would rather be inventive of the social (Marres, Guggenheim & Wilkie 2018), or, as I would suggest, designing the social.

The science of climate change: A source of national-level variation rather than commonality, *Conrad George, Pompeu Fabra University*

Science has played a critical role in defining the global policy response to climate change. The shift from global to national policy under the Paris Agreement necessitates closer consideration of science and policy at the national level, as different national social contexts may co-produce different science. I analysed how the global science of the Intergovernmental Panel on Climate Change migrates into national policy environments. I examined contemporary debates in UK and US legislatures that engaged with the IPCC science directly and through policymaking. While content was similar, differences existed in how the concept of science and the specific science of climate change were understood. I identified three basic characteristics in which national differences were salient: the status of the science; the mode by which science was determined to be valid; and the function of the science. Comparing these characteristics with the policy responses produced interesting results. Greater certainty in science produced a policy environment in the US where policy stalled. Yet, the UK, where the provisional nature of science was recognized, produced policy that took account of science. Global science, as understood in the national policy context, thus provided a site of variation to investigate, rather than commonality across states.

Drawing the line: Evaluation in emerging academic disciplines, *Alison Gerber, Lund University*

Issues of quality and value are perpetually lively and contentious in academic work, and research on the architecture of evaluation has consistently shown that organizational constraints, whether well-motivated or adopted ad hoc, have enormous influence on outcomes. The negotiations behind the development of standards are especially decisive in new and emerging disciplines. This paper takes as its case the recent development of the state-funded field of artistic research and the PhD in artistic practice in Sweden, where the interplay of artistic, scientific, and public standards and values is pushed front and center with each funding cycle and public viva. Drawing on an analysis of documentary evidence (dissertations, evaluation committees' assessments, hiring decisions, and funders' reports), this manuscript shows how diverse evidentiary regimes are mobilized by insiders (artists, artistic researchers, art school faculty) and outsiders (faculty and researchers from other disciplines and research funders) in the development of standards in the the artistic research field. With special attention to those judged not good enough, and the justifications offered by those who reject them, this analysis will leverage unique sources to understand the interplay between architectures of evaluation, internal and external standards, and outcomes in emerging academic disciplines.

Upon opening the blue box: Investigating agency when your manager is an algorithm
Kalle Kusk Gjetting, Aarhus University

The last decade has seen a prolific rise in gig platforms that act as technological intermediaries connecting a fleet of loosely knit workers (Rosenblat, 2018; Wood et al., 2019). Extant research of what has been dubbed the 'gig economy' point to potential increases in both organizational efficiency, as well as worker precarity (Graham et al., 2017; Sundararajan, 2016). Yet, limited empirical research has been conducted in an STS-setting (See through Kinder et. al, 2019). Presently, I am engaged in ethnographically investigating a gig platform by putting a "blue box" on my back, as I work as a food courier with the Finnish food delivery startup Wolt. In this paper, I present findings from my 6-month long courier work biking around a middle-sized city, as well as from semistructured interviews with other couriers about topics ranging from algorithm manipulation to balancing strategies for beet juice. Gig work has been feared and praised as one of the futures of work (eg. Graham et al., 2017), and this paper thus resonates with the conference theme of "Future of STS", providing one area that requires novel STS investigations. It illuminates a new type algorithmically managed work with both promising and concerning aspects.

SARS-COV 2 and the probiotic turn, *Giampietro Gobo, Univeristy of Milan*

The emerging "probiotic turn" (Lorimer 2020), in contrast to the "antibiotic approach" (delivered by Big Pharma, extreme hygiene, and industrial agriculture) frames viruses and bacteria as partners in our evolution, and human beings, as "symbionts". Hence, viruses do not "attack", but they come and go in/from the host's body and many of them are absolutely

beneficial. According to it, in the 1800's Bernard and Béchamp opposed Pasteur, who hypothesized that the diseases were due to germs. They thought that the disease developed only when it found the "fertile" cellular soil (in the sense of a sick body). In other words, the real cause of the disease were not the pathogens (which are always around) but the host (the environment) who became vulnerable due to an inappropriate diet and lifestyle. Hence, the pathogens are not the cause, but the effect of the disease; denying that bacteria could attack a healthy animal and cause disease. This position envisions hopeful alternative narratives of the current pandemia and the future, according to the Anthropocene and multispecies ethnography, whose aim is to re-imagine the relationship between humans and other living beings. Beyond apocalyptic narratives, the lives of other living beings provide examples of biocultural hope. Other creatures teach us alternative ways of being in the world, to decentralize the anthropos and imagine the Chthulucene (Haraway 2016), an age constituted by new networks of relationships, adaptability, acceptance and cohabitation.

Using recreational DNA databases to identify criminal suspects: The participatory turn and the co-production of biovalue in forensic genetics, *Rafaela Granja, University of Minho*

In the last decades, the collection, analysis, processing, and use of genetic data has grown massively, leading to the establishment of large DNA databases in both the forensic and health domains. More recently, there has also been a significant increase in recreational DNA databases with commercial purposes. Such databases are used by citizens to voluntarily upload genetic data to know more about their health, ancestry and/or search for relatives. Recreational DNA databases are also being used for criminal investigation purposes, thereby blurring the boundaries between previously distinct kinds of genetic collection and genetic practice. Such is made possible by a technology named familial searches that detects genetic relatedness to identify criminal suspects. The use recreational DNA database to identify criminal suspects is done without regulation and governance mechanisms but its defenders argue in its favour due to the success obtained in identifying criminals. In this paper, I explore how the use of recreational DNA databases to identify criminal suspects reframes the trajectory of forensic genetics. More particularly, by outlining it's the participatory turn and the associated co-production of biovalue.

Assembling political visions in the 2019 Copenhagen Local Authority Plan, *Ask Greve Johansen, Aalborg University*

I retrace the assembly of the political visions in the City of Copenhagen's Local Authority Plan (da. 'kommuneplan') 2019. The story emphasizes emergent qualities of policy articulation through the drafting of a political vision. Bureaucrats and politicians mutually equip each other to partake in future-making work, revealing the bureaucratic work involved in setting up a space for politics: the negotiation of the plan's contents. As action unfolds, increasing emphasis on the discursive aspects of the plan is given, expanding the political

ambitions of creating a greener and more liveable city through the local authority plan. The story illustrates how the craft of policy formulation entails acts of revealing as well as concealing; at times rendering the origin of phrases and ideas transparent while at others making them opaque. Strategic urban planning is concerned with constructing futures in dialogue with and/or opposition to (mostly human) collectives. Techniques and technologies of this process, e.g., drafting, arranging seminars, and conducting public hearings, are described from a partial perspective, drawing on document analysis and field work in an office participating in the process. Ghosts from the Magistrate Wars (1978-1986) haunt the offices as interaction and conflict move between administrations, political parties, citizens, and urbanists.

The future is flexible? Exploring expert visions of energy system decarbonization, *Christopher Groves, Cardiff University, Karen Henwood, Nick Pidgeon, Catherine Cherry, Erin Roberts, Fiona Shirani & Gareth Thomas, School of Psychology and Understanding Risk Group, Cardiff University*

The sociology of expectations shows how visions of socio-technical futures can have performative effects now. Further, it shows how testing the credibility of visions is a central element of the ways in which innovation is governed. The decarbonisation of energy systems has been positioned as vital for climate change mitigation and adaptation. But the role of visions in energy system decarbonisation is complex, given that they may operate at and across a variety of scales (from localised demonstrator projects to national energy systems). The processes that shape such visions and through which their credibility is tested have not been studied in detail. To help remedy this, we present results from a programme of interdisciplinary research involving social scientists and engineers (the FLEXIS project, south Wales, UK, http://flexis.wales). Interviews with experts and stakeholders (public policy, industrial partners) show how visions for FLEXIS as a whole and for individual demonstrator projects are interrelated via key thematic foci (decentralisation, grid topology). Further, we show how experts leverage a range of values beyond the purely technical (including relationships between energy infrastructure and place identity, or the socio-economic history of demonstrator host communities) in discussing what might count as credible visions for system change and for demonstrator projects.

Separated yet connected: Early prevention of antimicrobial resistance in Swedish husbandry and human health care, *Hedvig Gröndal, Swedish University of Agriculture*

Sweden has been lowering the use of antibiotics in human health care as well as in husbandry – today the Swedish consumption of antibiotics in both these areas is among the lowest in Europe. In Swedish official documents the cross-sectional character of Swedish AMR-prevention is described as crucial for this. However, the early reduction of antibiotic use in human health care and husbandry were not parallel in time and appear to have been

two separate processes at large. In this paper these two developments are compared, and the connections between them investigated. I argue that, on the one hand, the separate character of these processes have been key to the reduction of antibiotic use. AMR was produced as a matter relevant to both husbandry and human health care; as a matter of increasing animal welfare and food safety in relation to the latter, and as a way of preventing spread of antibiotic resistant bacteria in relation to the former. On the other hand, I also argue that the connections created between these processes have been crucial for the current privileged status of AMR in Swedish politics and policy. Thus, the separate processes did not exclude productive partial connections.Sweden has been lowering the use of antibiotics in human health care as well as in husbandry – today the Swedish consumption of antibiotics in both these areas is among the lowest in Europe. In Swedish official documents the cross-sectional character of Swedish AMR-prevention is described as crucial for this. However, the early reduction of antibiotic use in human health care and husbandry were not parallel in time and appear to have been two separate processes at large. In this paper these two developments are compared, and the connections between them investigated. I argue that, on the one hand, the separate character of these processes have been key to the reduction of antibiotic use. AMR was produced as a matter relevant to both husbandry and human health care; as a matter of increasing animal welfare and food safety in relation to the latter, and as a way of preventing spread of antibiotic resistant bacteria in relation to the former. On the other hand, I also argue that the connections created between these processes have been crucial for the current privileged status of AMR in Swedish politics and policy. Thus, the separate processes did not exclude productive partial connections.

Orienting devices and making future: Climate-related financial disclosures and the capitalization of climate change, *Niina Hakala, Copenhagen Business School*

This paper explores the politics of time (Opitz and Tellmann 2015) in an attempt to civilize markets (Callon 2009). It does so by exploring the arrival of the industry led expert group, Task Force for Climate-Related Financial Disclosures (TCFD) and their recommendations on financially relevant climate disclosures. Conveyed by the Financial Stability Board, and championed by Mark Carney and Michael Bloomberg, TCFD has reached global support that has surprised many. By describing how the initiative radically reorganizes the corporate reporting field as the existing reporting organizations, regulators and other actors begin to perform the world envisioned through the TCFD, the focus is in showing how the expert apparatus becomes a critical knot in materially binding the financial future to the present by providing it with material durability. (Tellmann 2020). Furthermore, such materiality is directional. Following Ahmed's (2006, 2010, 2017) work on orientations and objects, TCFD is considered as an orientation device that guides the directional unfolding of events toward a particular type of conclusion. As the case shows, the disclosures are less about the increased transparency, than of producing particular types of subjects with particular gaze and horizon

in mind. Finally, in making sense of the above, the paper draws on the idea of capitalization, considering TCFD as a semiotic assemblage which both requires and prompts political configuration (Muniesa et al. 2017; Muniesa 2019, 60) making it first and foremost a power operation before a profit operation. (Guattari 1996).

The carbon weight of cows: examining sociotechnical imaginaries of dairy cows in North West England, *Naomi Hammet, Lancaster University*

The prominence of techno-scientific approaches to climate change has meant that global debates on the subject have largely centred around the need to reduce Greenhouse Gas Emissions (GHG). In the agricultural sector in England, this has been reflected in the growing trend towards the use of carbon assessment technologies, such as carbon footprints as a way for farmers to 'measure, manage and mitigate' the GHG emissions on their farms. In this paper, I will explore what practices around carbon footprinting on dairy farms in North West England do, specifically, what futures they help imagine/enact for cows on dairy farms, this is informed by my interviews with dairy farmers in the North West. Debates around the future of dairy farming often centre around the perceived need for either 'more' milk, 'better' milk or 'less' milk (Clay & Yurco, 2020) and yet what these imagined futures will mean for the lives of cows is rarely touched upon. Using the concept of sociotechnical imaginaries (Jasanoff & Kim, 2013) together with Mol's (2002) notion of the body multiple I examine how cows bodies and lives and caron footprinting technologies and narratives rub along together on dairy farms in North West England.

Three perspectives on fertility treatment 'add-ons' in the UK, *Josie Hamper, Manuela Perrotta, Queen Mary University of London*

Fertility treatment in the UK has become embroiled in debates about the place and value of treatment add-ons, which are optional tests or treatments that are offered in addition to 'routine' in vitro fertilisation (IVF), often at additional cost to the patient. Importantly, treatment add-ons generally claim to improve some aspect of the treatment procedure, which for individual patients suggests improved chances of having a baby at the end of treatment. However, conventional forms of high-quality medical evidence, such as randomised control trials, do not currently support the widespread use of treatment add-ons in IVF. Drawing on ethnographic research, document analysis and over 90 qualitative interviews, we unpack the question of 'what is an add-on?' from the perspectives of the UK regulator, fertility professionals and fertility patients. These actors, as we will show, work with different conceptualisations of treatment add-ons, which has important implications for understanding the different values assigned to information, evidence and safety in IVF. This paper offers an empirically informed discussion of the tensions that emerge between different categorisations of treatment options.

A sociology of high expectations: Competencies and domain knowledge in quantitative finance, *Kristian Bondo Hansen, Copenhagen Business School*

This paper examines what makes a talent in the world of quantitative finance. Drawing on 200 interviews with market participants working in mainly quantitative investment management and algorithmic trading primarily in London, Amsterdam, New York, and Chicago, we identify and outline what the industry expects of prospective hires and what people in the industry consider the most valuable competencies to be. Mobilizing a sociology of expectations approach to the study of competencies in quantitative finance the two-fold argument presented in this paper is that (1) although specific competencies are sought after in the financial industry, they are at the same time at risk of becoming obsolete due to technological change constantly rearticulating expectations, and (2) that economic knowledge is often depreciated or at least considered of secondary importance compared to technical skills such as data analytics, advanced statistics, coding, etc. Studying what practitioners expect of people entering the financial industry, helps provide an understanding of the industry's present as well as some pointers as to where its future lies.

New biomodifying technologies and near future alignment work, *Kristoffer Hansson, Malmö University*

Pluripotent stem cells has for a couple of years been seen as a promising prospect for cell-replacement therapies treating for example Parkinson disease. As such it is one of many biomodifying technologies that will reshaping the work in science and medicine in the near future. Other technologies are for example gene editing and 3D bioprinting, technologies that not only creates possibilities to modify living biological tissues but also give options to do this in more customized ways. In a recent article I have argued that the pluripotent stem cell is a form of biomateriality in the laboratory that "is no longer fixed, but negotiable and in constant flux" (Alftberg, Hansson & Idvall 2020). This creates new conditions for how to apply and maintain standards when this biomateriality moves between different epistemic cultures. In this paper I want to see how the notion of alignment work can be used to better understand how different actors in science and medicine are trying to resolve tensions – for example conflicts and risks – when the pluripotent stem cell travels between different epistemic cultures. This different context can be, between different laboratories, between the laboratory and the clinic, between the laboratory and the public.

'Show us your numbers!' Life cycle assessments as marketing devices, *Jacob Hasselbalch, Copenhagen Business School, Ludwig Bengtsson Sonesson, Mark Cooper, Johannes Stripple, Lund University*

Life-cycle assessments (LCAs) are emerging as the most important technique for determining the environmental impacts associated with all stages of a product's life cycle from raw

material extraction to final disposal. LCAs are increasingly intervening in and shaping the governance of sustainability transitions. We argue that one important manner in which they do so is by serving as obligatory passage points in the practice of sustainable production and consumption. Specifically, we are interested in the way LCAs are deployed as marketing devices, through which the sustainability credentials of different kinds of products are standardized and made commensurate before being communicated to consumers as a salient competitive metric that influences consumer choice. The aim of the paper is to investigate the effects of using LCAs as marketing devices. We draw on in-depth case studies of four examples of low-carbon innovations in heavy-emitting sectors: oat milk, bioplastic textiles, zero-waste grocery stores, and lab-grown meat. We find that three overall themes emerge from the use of LCAs as marketing devices, but variations exist between the cases: (1) LCAs re-shape niche-incumbent relations, (2) produce new subjectivities on the part of both producers and consumers, and (3) mediate between alternate trajectories of market development.

The Legalities of Death by Algorithm – comparing the legal framework of driverless cars and automated weapons, *Luisa Teresa Hedler Ferreira, Copenhagen Business School*

Technological advances in the field of automation have introduced the possibility of substituting humans in many activities – including killing other humans, which give rise to regulatory challenges, especially those concerning the attribution of legal responsibility. The study of the potential new technologies to disrupt social systems, such as law, and the subsequent adaptive responses are an integral part of STS. The objective of the present paper is, through the comparison of the legal framework of driverless cars and automated weapons, identify the challenges in regulating situations where the loss of human life is directly caused by a non-human agent. The notion of automated weapons capable of selecting and engaging targets without human imput – “killer robots” – is highly controversial, with civil society organizations calling for a ban, only permitting automation up to the point where there would still be relevant human control. However, this key concept is problematic, nebulous and possibly without substance in face of the speed of technology. When it comes to driverless cars, even though the potential to kill is still present and hotly debated, the loss of human control is considered acceptable in many scenarios, allowing a more nuanced discussion about legal responsibility with and without the human driver. I intend to conduct this comparison through document analysis of domestic and international legislation, regulations, administrative documents as well as bibliographic review to identify particularities and differences in the conceptualization of ‘death by algorithm’, in order to contribute to the discussion of the regulation of autonomous weapons.

The Future of AI Development, *Maria Hedlund, Lund University, Erik Persson, Lund University*

The aim of this paper is to argue for the importance of considering how different distributions of forward-looking responsibility today will affect the long-term development of Artificial Intelligence and the human—robot interaction regarding democracy, safety, and AI development. A forward-looking perspective on responsibility focuses on the question: Who should do what, and when, to make sure that things do not go wrong? In addition, key to a forward-looking perspective on human—robot interaction is how decisions today lead the development in a certain direction that may be difficult to change later. Whose responsibility is it to set the norms that will determine the direction of AI development? Responsibility is rarely an either—or question of who (or what) shall take responsibility for a situation, but rather a relational question of how much and which kind of responsibility to distribute to different agents (including machines). Drawing on theories of responsibility, human—machine interactions, policy-making processes, and ongoing public debates on AI, we elaborate on a set of potential distributions of responsibility and assess them in terms of anticipated effects on democracy, safety, and AI development.

Exploring sociotechnical imaginaries of a circular economy: different futures ahead?, *Abe Hendriks, University of Groningen & Ghent University, Erik Paredis, University of Groningen & Ghent University*

This paper aims to advance the understanding of how innovations such as the circular economy are imagined to bring a desirable future. Although the concept of the circular economy has gained widespread attention in business, governments and academia, the meaning of the concept differs widely and the term is used inconsistently. We elaborate on the concept of sociotechnical imaginaries that allows us to describe and understand collectively held visions of the circular economy that are present in society and inherently explicate ideas of a social and material order. Drawing on a comparative case study between the Dutch region Fryslân and the Swedish region Gotland, we contribute by conceptualizing how locality, temporality and collectiveness are implicitly expressed within imaginaries. One of the main nuances this conceptualisation wants to contribute to the field is to emphasize the heterogeneity of visions and collectives within nation-states and to expand the research done on visions that are held collectively on another scalar level than the national one to emphasize the co-existence and competition of multiple frameworks of norms and values.

The Fictioning of NewSpace Futurity, *Rachel Hill, Goldsmiths University of London*

Space exploration has long been the locus of utopian hope, with the flare of rocket engines fuelling futures which have, as of yet, failed to manifest. Yet many are haunted by these past futures, and long for them still. With this in mind, it behooves us to interrogate how contemporary space organisations wield the utopian valences they inherit, whilst also reflecting on how science and technology anchor the stories we tell ourselves about

humankind's projected future as a space-faring species. To this end, I will evaluate the role that space-based utopian futures play in the nascent commercial space industry known as NewSpace, to better understand the 'sociotechnical imaginaries' (Jasanoff & Kim) it mobilises and propagates. I will then review how NewSpace takes up and mobilises these futures, as it braids together commercial interests with anticipated utopian outcomes, to situate their extractive practices within a trajectory of purported mass societal amelioration. I will also give thought to how NewSpace incorporates science fictional (SF) aesthetics as a primary mechanic through which to narrativise, and preemptively secure, its renovated iteration of utopia futurity. Finally, I will end with considerations of how SF can enact alternative imaginaries as strategies of resistance to NewSpace's astrolised and accelerated modes of neoliberalism.

Singing (the end of) our world into existence, *Tom Hobson, University of Cambridge*

Humanity is often said to be at the most perilous moment of its 300,000-year history. For many, the ongoing COVID19 pandemic has brought the fragility of our futures into sharper focus. There is a growing field of research directed towards understanding the possibility of future catastrophe or collapse that could lead to the end of humanity or a loss of life in the realm of tens of millions. This field is broadly classified as "existential risk studies," Mainstream accounts from existential risk research, and the growing common sense among relevant policy actors, focus on how anthropogenically driven extreme risks are likely to result from "terror or error". I argue instead that focussing primarily on accidents (albeit, low probability/high-impact ones) as liminal possibilities that are essentially exogenous to the ways we order our societies and economies carries with it the very real risk of failing to recognise the sociotechnical reproduction of these possible futures, and our projection of categories of risk onto them. The idea that even accidents - both in their occurrence and their consequences - are endogenous to the systems within which they occur should be central to our efforts to create a survivable future. This paper presents an opportunity to consider the ways that science and technology studies, and most particularly sociotechnical imaginaries and sociologies of expectation, could enrich our understanding of extreme risks to the future of humanity and the planet - and in turn how these apocalyptic visions can serve to condition our politics in the present.

Political Economy, STS and Digital Futures: The Danish Digitalization Industry, *Michael Hockenhull, IT University of Copenhagen*

Digitalization of the public and private sectors, and even dimensions of our personal lives, is ongoing and increasing. COVID-19 has only sped up this process. This paper argues that STS needs to reengage with a political economy approach in order to understand the drive to digitalize and the future thereby being constructed. To make this argument, the paper provides an empirical study of the political economy of the digitalization industry in

Denmark, one of the world's most digitalized countries. The paper argues that Danish digitalization has taken place in the public sector through a coordinated strategy of neoliberal management aimed at reducing the overhead of its welfare state and increasing the competitiveness of its private sector. The private sector has in turn sought to digitalize itself by investing in a range of technologies to remain competitive. Digitalization is in this understanding driven by a dynamic of policy, law and economic incentives, which the paper unpacks. The paper discusses how this structural approach sits at odds with certain STS commitments, but is a vitally necessary compliment to the field if it is to tackle the matters of concern which digitalization represents.

Pandemic publishing: Changes in journal peer review in times of the Covid-19 pandemic, *Serge Horbach, Aarhus University*

The Covid-19 pandemic has drastically impacted nearly all aspects of global society, including science. In particular, it has resulted in notable changes in dissemination and quality assurance practices. With publishers establishing fast-track channels prioritizing Covid-19 research, concerns arose about the validity and thoroughness of the peer review process and the published record alike. Working in an STS tradition of research evaluation and scholarly publishing studies, this talk will present the findings of two related studies: (i) a quantitative, bibliometric study demonstrating a strong acceleration of medical journals' review process for Covid-19 related research; and (ii) an in-depth qualitative study using document analyses of open peer review reports and editorial decision letters to demonstrate shifts in the quality criteria used to assess Covid-19 related manuscripts. Most notably, it indicates a shift from gatekeeping to quality improvement mechanisms and a tendency to reduce requests for additional experiments and data. Since several of the changes in scholarly publishing set in motion during the current crisis are expected to last also after the pandemic, understanding of its dynamics and content are of prime concern to both contemporary and future science and STS.

Communicating AI for responsible research and innovation, *Maja Horst, DTU Technical University of Denmark, Jesper Hintze Nielsen & Gro Berg Sørensen, DTU Technical University of Denmark*

AI is expected to have transformative effects in many industries and in the public sphere as well. Simultaneously, voices in the public sphere consider AI a threat to social values and practices. This paper sets the scene for a new project dedicated to the study of the effects of such a highly charged public and policy communication environment on the conditions for responsible research and innovation within AI. The project adopts a perspective of studying innovation communication as an integrated part of the research and innovation process. Positive expectations about the future technology are necessary for the generation of resources, such as funding, legitimacy, human talent. At the same time, public imaginations

of particular technological futures can have adverse effects, for instance on the political decision-making to allow, postpone or deny experimental use of big data or AI in public services. Communication is therefore not an add-on to AI development, but a constituent part of how technologies can and will be developed. The project covers various areas such as the interrelationship between policy and media discourse, the influence of science fiction on imaginations of the future as well as cross-cultural sense-making between Denmark, Europe and China.

Citizen activities in energy transitions: tracing the configurational movements to study sociotechnical change, *Sampsa Hyysalo, Aalto University*

The dominant theorizations of sustainability transitions are anchored to broad-stroke histories and studies of globally early settings of alternative technologies. For understanding how the majority of transitions play out on the ground in specific countries, areas, and locales, these may in fact be rather poor "model organisms", as most transition dynamics necessarily take place in follower contexts. Analyzing socio-technical change in small scale renewables in Finland through a decade long ethnographic and historiographic study underscores two dynamics. Firstly, transitions in follower contexts are not well characterized as linear diffusion process or quasi-linear social-embedding process. They feature series of configurational movements between global and global and between supply and use during which the materialities, ecologies of actors and interaction arenas are shaped. Second, attention to these configurational movements surfaces actors and activities that have hitherto been invisible or based on theory-led assumptions in birds eye view research. We found citizens to carry out highly important activities in not just adoption but in adaptation and adjustment, user innovation, championing projects, forming user communities, user-side intermediation, market formation, and legitimacy building. These user activities continue from the early to the late phases of transition, changing our understanding of relevant actors in energy transitions.

Taking the innovation cure: futures, ambivalences, contextualities and democracies,*Alan Irwin, Copenhagen Business School*

Innovation is often heralded as the cure for the economic, environmental and social challenges facing the nations and regions of the world. It follows that public policies for research and innovation represent an important means of building – or talking about building - the futures. On the one hand, this draws attention to the distinctive ways in which innovation policies are imagined and performed in different global settings. On the other, there is a remarkable sense of familiarity across contexts as similar concepts and innovation models are proposed. A research project at CBS is currently exploring these isomorphic-difference relations. Against this background, this paper asks the question: how can - and how should – STS engage with innovation? An answer is sought under four main

headings: futures, ambivalences, contextualities and democracies. The conclusion is that STS brings important conceptual and empirical resources to our understanding of the 'innovation cure' – but also that this has implications for STS itself. In particular, STS scholars are challenged to engage in new ways with this ambivalent, contextualised and democratically-significant phenomenon.

Race, Identity, and Algorithmic Dissonance, *Shiv Issar, University of Wisconsin-Milwaukee*

In this paper, I propose that the concept of Algorithmic Dissonance characterizes the inconsistencies that emerge through the fissures that lie between algorithmic systems that utilize system identities, and sociocultural systems of knowledge that interact with them on human-algorithm networks. A product of human-algorithm interaction and a broader scheme of conceptualization in its own regard, Algorithmic Dissonance builds upon existing Science and Technology Studies (STS) literature, and more specifically, the scholarship being produced by the emerging subfield of Critical Algorithmic Studies. Here, I use Du Bois' concept of "double consciousness" and black feminist theory to show how all Algorithmic Dissonance is racialized. Moreover, using Ulrich Beck's Risk Society framework, I also stress on the need for the broader inclusion and legitimization of art as a source of information for the sociological critique of human-algorithm networks. Toward that end, I advocate for the use of more inclusive/speculative methodologies for the creation of critically informative sociotechnical imaginaries. Collectively, these arguments bear the potential of ameliorating the problems posed by the inherent biases within algorithmic decision-making, which concerns our collective futures.

Responsible Innovation and Umbilical Cord Blood Banking in India: Exploring Ethical Issues, *Astha Jaiswal, Central University of Gujarat*

Advancement in Artificial Intelligence are creating paradigm shift in almost every dimension of technology. From SIRI to self-driving cars, artificial intelligence (AI) is progressing rapidly. Today AI encompasses a broad range of technologies, such as Google's search algorithms, Manufacturing robots, Virtual travel booking agent, Natural Language Processing (NLP) tools. IBM's Watson, autonomous weapons, machine learning, deep learning, autonomous weapons and predictive analytics.The COVID-19 crisis has triggered and accelerated a number of changes and transformations in human society in an unprecedented way.As contactless technology will become increasingly significant, and widespread in post corona times, role of AI in creating a contactless society will be crucial. As the world prepares and gears more and more towards contactless technology, AI lead technological solutions will become more pervasive,as will the ethical, societal, and policy considerations that come with it. The controversial nature of impacts created by AIhas triggered many debates and questions, centered around the social and ethical aspects of AI. Concerns about the risks posed by scholars and researchers. This is because most recent breakthroughs in AI, which

were thought to be as science fiction or centuries away a few years ago, have now become a reality. Even the possibility of achieving super intelligence in AI seems to be imminent in near future. The Indian healthcare sector faces many challenges – political and economic uncertainty; accessibility; growing prevalence of chronic diseases and an ageing population. Also, a significant portion of the population is underserved in health care because of the skewed ratio of doctors. With the world witnessing the onslaught of global pandemic, the utility and demand for telemedicine is on the rise worldwide.Covid-19 is causing millions of people to try telemedicine for the first time. Telemedicine will continue to grow rapidly.Since the coronavirus outbreak, among many things that have changed is telehealth's position in healthcare delivery. Telemedicine has become a fundamental piece of the Indian healthcare system.Responsible Research and Innovation (RRI) has emerged in recent years as a framework for science policy to make research and technological development processes take into account potential impacts on the environment and society. At its core, RRI emphasizes that societal challenges should be a primary focus of scientific research. While RI aims to be global in its scope, it has not yet been extensively applied in practice. Responsible innovation is evolving and is continually being conceptualized and implemented in different ways and contexts.In light of the above discussion, the present study explores the dimensions of AI driven telemedicine in Indian context, by engaging with the literature on Responsible Innovation. The aim of the present paper is to outline the key benefits, risks and concerns in the field of AIdriven telemedicine specifically for the Indian context. Using the principles of RI, we frame the dimensions of RI to meet the challenges that arise as telemedicine sees .In this context, we implications of AI in India and explore emerging ethical questions.

Automating urban futures: From prototypes to practice? *Meri Jalonen, Aalto University, Sari Yli-Kauhaluoma, Aalto University*

Automation promises to free humans from heavy work and provide new services. To materialize these promises, prototypes of automated devices are tested in real-world settings, rendering urban spaces to test-beds. Our study explores experiments with devices whose development has expanded from automated guided vehicles in industrial storehouses to public libraries and taken robot buses to the street. We have followed these developments with ethnographic observation and interviews across various urban test sites. Our study demonstrates that prototyping does not guarantee the materialization of automated futures. Library is a successful setting for logistics robots which carry book cases, allowing librarians more time to encounter clients and support active citizenship. The robot buses with technology originally developed for closed settings struggle to cope with various actants and weather conditions in street trials. Their promise of sustainable transportation is hampered by the well-functioning public transport in urban areas, calling for mobility needs for the buses to fulfil. We associate these struggles with the non-collaborative relationships between private manufacturers and public testers of the vehicles as well as with the

prototyping practices that involve citizens as mere spectators in design processes. The devices remain technical objects that do not invite problematization or elaboration of alternative urban futures.

Four faces of automation: Exploring hybrid practices involving humans and robots, *Meri Jalonen, Aalto University*

Potential trade-offs of the increasing level of automation of work are raising public concern. While the discussion focuses on the impact of algorithms and artificial intelligence on organizations and societies, more mundane technologies may provide important insights into potential consequences of hybrid assemblages consisting of humans and machines. This study draws on ethnographic research to explore automation in three different settings and with three kinds of robot technologies. (1) Industrial robots in a packaging company, where human operators control and take care of machines that manufacture packages. (2) Robotic process automation in public administration, where humans program software robots to process monotonous tasks, provide input for the robots and control or process their output. (3) Automated minibuses in public transportation, where humans control semi-autonomous vehicles as operators, rely on their performance as passengers and try to make sense of their behaviour as drivers, pedestrians or cyclists. Based on an analysis of sociomaterial relations that emerge in hybrid practices combining human and machine work, the study elaborates relations of care, concern, control and collaboration entailed in the automation of work.

Educational technologies as a matter of care, *Juliane Jarke, University of Bremen, Irina Zakharova, University of Bremen*

Within feminist studies and Science and Technology Studies (STS), scholars such as Bellacasa (2017) or Mol, Moser & Pols (2010) have proposed a shift from matters of concern to matters of care. Here, matters of care are understood as the configuration of ‚care arrangements' in which care work is distributed across different types of actors (Criado & Rodríguez-Giral 2016). Responding to the conference theme, our paper offers an analysis of educational technology (design and use) as 'matters of care', facilitating and enabling (new) care arrangements. Scholarship concerning educational technologies has so far not considered to what extent this analytical shift is productive for its critical inquiry. For example, educational practices (such as learning or teaching) are understood as 'matters of fact' that can be quantified by research on learning analytics. In response, critical educational scholars have foregrounded 'matters of concern' such as governance, inequality or privacy in their studies of educational technologies. We are interested in how educational technologies are configured as sociomaterial arrangements of caring for people, selves, schools, infrastructures, data and more. We critically reflect on how educational technologies render care work (in)visible and allow for new ways of caring, where data and technology become care-givers and carereceivers.

Publishing queer-feminist research and voices in pandemic times, *Daniela Jauk, University of Akron, Magdalena Wicher, Anita Thaler & Birgit Hofstätter, University of Akron*

Our intervention at the NOSTS2021 aims at sharing our working methods and strategies in a pandemic as a queer-feminist editorial collective. The Queer STS workgroup exists as a discussion, research and support network since 2011. Since 2016 we autonomously publish the Queer-Feminist Science and Technology Studies Forum (short Queer STS Forum) as an open access forum to share queer feminist perspectives on STS, open to scholars, practitioners, and activists of all genders and world regions. Covid-19 has exacerbated the (self)care crisis of researchers and we looked for ways to solicit perspectives while not weighing down people's schedules. For the fifth volume of our Queer STS Forum we thus not only asked for scholarly papers, but between July and November 2020 collected voices, videos and art from our community. The contributions addressed the following questions: How did and does the COVID-19 pandemic – and the measures taken in their countries – change their work, their research, their teaching, their daily routines and their relationships? We wanted to know what they think: Which consequences will only be temporary, which effects will last? And: How do they feel about all that? In our multivocal presentation for NOSTS2021 we want to share our work process during that bizarre year but also present and promote the interventions of the more than 20 contributors to Queer STS Forum #5: https://queersts.com/forum-queer-sts/queer-sts-forum-5-2020/.

AI, Transhumanism & the Construction of the Future, *Dayna Jeffery, York University*

This paper will offer analysis from the early stages of my dissertation, which explores the implications of transhumanist ideologies on AI development. Transhumanism is a global movement with specific ideas for how AI will integrate with the human body, with goals like preventing aging and enhancing cognition (Diamandis 2012). Rather than categorize transhumanist imaginaries as dangerous or extreme, I will take these discourses seriously by examining the role of transhumanist imaginaries in contemporary technological development. Research objectives include: How do transhuman future expectations inform present-day technological development? What transhumanist discourses underlie popularly held beliefs of future technological progress? What visions of the future garner more support and why? A key issue here is that certain discourses (i.e. transhumanist ones) increasingly configure broad social and financial investments in AI development, sidelining other considerations (e.g. social justice and equity). The sociology of technological expectations (STE) will be used to analyze the future-orientation of technological innovation, centring the 'future' as an important object of enquiry in STS (Brown et al. 2000; Borup et al. 2006). My project will consist of interviewing tech-enthusiasts, in order to investigate transhuman discourses. Social actors such as government funders, policymakers, and private investors, will be interviewed in order to explore funding and investment decisions about AI.

Finally, AI developers, technologists, and scientist, will be interviewed in order to analyze how visions of the future come to configure the development of particular AI in the present.

The Making of Concerns in Markets During Times of Crisis. The Case of PPE Markets during the COVID-19 Pandemic, *Linus Johansson Kravfe, Linköping University, Nurgül Özbek, Linköping University*

This paper addresses the making of collective concerns in markets for Personal Protective Equipment (PPEs) during COVID-19. While such 'concerned' PPE markets are expected to solve a public issue by providing a vital good, they operate under an economic logic where the performativity of economic transactions allocates resources and shape collective concerns. The paper presents a pilot study of buying practices in PPE markets in Sweden, the EU, and the UN. We ask how these buying practices shape the market sensibilities of PPE markets? Our analysis highlights how such sensibilities amplify or demote collective concerns in specific ways. This includes the devotion in PPE marketsto local or global societies, matters of fairness, accountability and equitable distribution. Our findings tap into contemporary discussions about the performativity of markets in times of crisis, as we contribute with conceptual knowledge needed to construct more civilized markets for PPEs. These findings also open up a space to investigate the role of STS scholars in shaping collective concerns in markets for vital goods.

Is automation the future of casework? Automation projects and the emergence of new work tasks, *Louise Jørring, Copenhagen Business School*

Public sector organizations increasingly implement automation technologies, typically with the promise of an easier workload for public employees and more efficient case processing. This study challenges these promises of efficiency, arguing that some work tasks are often missing from the equations. Based on a case study of a Danish job center, this paper shows how new tasks emerge in relation to the implementation of automation technologies and why these need to be made visible. The study is ongoing and data is generated through document analysis, interviews and observations. Initial findings show that the implementation of the automation technologies were challenged by different elements; bureaucratic structures, complexities of the cases and other digital technologies. In the interplay between the automation technologies and the abovementioned elements, new work tasks emerged. The caseworkers e.g. spent time on trouble shooting, digital support of colleagues, double-checking and cross platform balancing. Tasks that were time-consuming, yet not accounted for in the planning of the automation projects. It is argued that such task needs to be acknowledged, in order to not only create more realistic project planning in the future, but also to understand the experience of work intensification among caseworkers.

The Powers of Uncertainty in Telecare, *Joni Jaakola, University of Turku,* Recently, technologically mediated 'telecare' solutions have become popular in achieving care to be more efficient, productive, and targeted in times of economic austerity and care deficit in ageing populations. While telecare has been implemented into care work, caring has increasingly become a practice of managing risks. This article draws from ethnographic research on the telecare solution Elsi in a care home setting and illuminates the properties of telecare as a form of risk management. The argument is, that telecare practices deal in many ways with 'uncertainty work' that produces epistemological, ontological and ethical uncertainties: uncertain knowledge, uncertain entities, and uncertain values. These uncertainties produce outcomes such as 'a productivity trap' which accomplishes the care worker as an entrepreneur while diminishing the responsibilities of care organizations and institutions.

Deceleration and Crisis: A case-study of temporal work in a multinational company during Covid-19, *Cecilie Kampmann, Copenhagen Business School*

In this paper, I discuss the effects of the Covid-19 pandemic on the temporal structure of work in technology-intensive work ecologies, and more specifically, the paper poses the following question: What kind of organizational deceleration characterizes the Covid-19 crisis? In addressing this question, I add to STS-inspired conceptions of temporality and work (Wajcman 2015) by utilizing Harmut Rosa's (2009, 2013, 2015) concept of 'deceleration' and Reinhardt Koselleck's (1978) notion of 'crisis'. I argue that Rosa's concept of 'deceleration' can help us grasp the partially standstill of many organizations, while Koselleck's notion of 'crisis' is used analyzing the often paradoxical demands that accompanies the present crisis. In particular, organizations and employees seem confronted with a paradoxical demand for upholding "business as usual", i.e. maintaining the same productivity as before Covid-19, while the core tasks of the organizations are simultaneously disrupted to such a degree that "business as usual" is impossible. To substantiate this argument an illustrate its consequences, I present a qualitative case-study of medical consultants at a multinational pharmaceutical company that includes data collected both before and during the corona pandemic.

Imagining Energy Transitions: Carbon Neutrality in Finland, *Kamilla Karhunmaa, University of Helsinki*

In many parts of the world, discussions on climate change have shifted from debating the necessity of action to discussing how, when, where and by whom action needs to be taken in order to mitigate and adapt to climate change. Simultaneously, discussions on energy policy revolve around expected and desired futures and the measures required to attain those futures. Research on sociotechnical imaginaries (Jasanoff and Kim 2009; 2015) has

contributed to analysing these. In this presentation, I examine a sociotechnical imaginary of carbon neutrality in Finland. I show how the imaginary is interpretatively flexible and thus enables both reaching consensus and accommodating diverse views. Analytically, this point to the importance of examining how an imaginary of carbon neutrality is co-produced with specific priorities, practices and governance arrangements. I suggest that carbon neutrality is likely to persist as a widely shared sociotechnical imaginary in Finland, due to possibilities it offers for political debate and compromise. At the same time, I propose that the concept of carbon neutrality will be increasingly challenged by new concepts, such as climate emergency, as well as calls to specify what counts as carbon neutral.

Gendered Negotiations of Material and Social Interactions in Public Transport, *Pinar Kaygan, Middle East Technical University; Harun Kaygan, University of Southern Denmark; Asuman Özgür Keysan, Middle East Technical University*

The social construction of gender through the design of technological artefacts, such as automobiles, motorcycles and domestic technologies, has received growing interest within feminist technology studies (FTS). Building on the extant FTS literature, in this research we explore how design of public transport (bus, minibus, metro) as a sociotechnical system shapes women's experiences of commute in their everyday lives. Drawing on empirical data that comes from interviews with 32 women, we focus on the complex entanglements of the women's interactions (1) within the vehicle as a technological artefact with its layout, interior elements and technologies such as cameras, and (2) with other passengers (both men and women) and the driver. These entanglements constitute gendered experiences in public transport. Our findings specify the strategies women develop with concerns of (physical and social) personal space, safety, and travel hours in public transport; some of which have gained more prominence during the Covid-19 pandemic. We underline the diversity of these strategies depending on vehicle types, routes, and time of travel within which women negotiate the material and social interactions. We argue that such interactions can, and should, inspire all stakeholders for responsible innovation for inclusive and egalitarian public transport design.

Reaching the future by reaching back - the role of time in China's STI policy to meet the urgency of rising sustainability concerns, *Julia Kirch Kirkegaard, Technical University of Denmark*

With an aim to explore the socio-technical construction of the future, this paper conducts a case study of temporality in China's Science, Technology & Innovation(STI) policy. Based on an analysis of dominant discourses in Chinese STI policy over the past 20 years, and zooming in on the current (and upcoming) 15-year plan(s) for China's Scientific and Technological Development ('MLP' 2006-2020 and 2021-2035), this paper inquires into the role of time in constructing a socio-technical imaginary of China's future, in particular the imaginary of a

‘Harmonious Socialist Society’ and the ‘Chinese Dream’. Referring back to China’s past and forward to China’s ‘renaissance’, Chinese STI policy construes a narrative around an imagined future for China, largely manifested through techno-scientific development, to achieve China’s economic catchup and industrial upgrading, and realizing China’s sustainable development. The paper concludes that ‘performing the future’ in China is construed increasingly as an urgent matter of solving matters of concern for sustainability through STI capabilities. The paper ends with a discussion of cross-contribution between STS and STI-literatures, concluding that while Chinese STI-policy reveals continuity in the mobilization of the past to perform the future, its impetus on public matters of concern for sustainability has changed. With an aim to explore the socio-technical construction of the future, this paper conducts a case study of temporality in China’s Science, Technology & Innovation(STI) policy. Based on an analysis of dominant discourses in Chinese STI policy over the past 20 years, and zooming in on the current (and upcoming) 15-year plan(s) for China’s Scientific and Technological Development (‘MLP’ 2006-2020 and 2021-2035), this paper inquires into the role of time in constructing a socio-technical imaginary of China’s future, in particular the imaginary of a ‘Harmonious Socialist Society’ and the ‘Chinese Dream’. Referring back to China’s past and forward to China’s ‘renaissance’, Chinese STI policy construes a narrative around an imagined future for China, largely manifested through techno-scientific development, to achieve China’s economic catchup and industrial upgrading, and realizing China’s sustainable development. The paper concludes that ‘performing the future’ in China is construed increasingly as an urgent matter of solving matters of concern for sustainability through STI capabilities. The paper ends with a discussion of cross-contribution between STS and STI-literatures, concluding that while Chinese STI-policy reveals continuity in the mobilization of the past to perform the future, its impetus on public matters of concern for sustainability has changed.

Knowledge and non-knowledge in the management of zoonosis – with livestock MRSA as a case, *Morten Knudsen, Copenhagen Business School, Sharon Kishik, Copenhagen Business School*

New zoonoses involve uncertainty and lack of knowledge - as we have seen with Covid-19. This raises the question how social actors manage the distinction between knowledge and non-knowledge. Zoonoses may involve a quest for knowledge as basis for cures and preventive actions. But it may also involve productions and/or maintenance of ignorance. The latter is the focus of this paper. Inspired by the emergence of what has been called agnotology (Proctor & Schiebinger, 2008) and the sociology of ignorance (Gross & Mcgoey, 2015; McGoey, 2012b, 2019), we study the production and maintaining of non-knowledge in relation to the spread of livestock MRSA in Danish pig farms in the crucial years from 2010-2014, where the prevalence of MRSA rose to irreversible levels. We contribute to the literature on organized ignorance by demonstrating how ignorance may be a result of the entanglement of several different dynamics. In the case under investigation, we observe

how ignorance is the result of the combinations of communication connecting to non-knowledge, lack of explicit strategies, protection of interests, bureaucratic silo-thinking, protection against knowledge calling for action where no action is evident, etc.

Networked Care: COVID-19, Digital Therapy, and The Future of Well-Being, *Marjo Kolehmainen, Tampere University*

Digital health has been considered a key development for future challenges, and the field of mental health is becoming increasingly digitised. This presentation explores the diverse practices of digital therapy and counselling in the context of the COVID-19 pandemic, aiming at producing novel insights into how human well-being is co-constituted with technological infrastructures. In particular, it examines the generation of intimacy in digital therapy. Rather than seeing intimacy only as a matter of human relations, it looks at the socio-material constitution of intimacy and its more-than-human constituencies. The data entails interviews of Finnish professional therapists and counsellors. In particular, it contributes to developing an understanding of networked care. Networked care is here perceived as continuous doing, where agency is distributed across various human and non-human actors: from professionals and clients to therapy venues, from psychic conditions to legislation, from technological equipment and software apps to economic factors. It thus seeks to expand the idea of more-than-human care to situations where technological infrastructures condition and shape the processes of advice-seeking and advice-giving. Theoretically, the presentation brings together insights from science and technology studies, feminist new materialisms and psychosocial studies.

Disassembly and the heterotemporalities of low-carbon transitions, *Magdalena Kuchler, Uppsala University, Bregje van Veelen, Uppsala University*

Time plays a central role in (re)imagining low-carbon energy futures. Whether through apocalyptic visions or deadlines for taking action, characteristic for these imaginaries is an, often unspoken, assumption of linear time with neatly identified interim targets and a future end points. In this paper, we propose studying low-carbon transitions through the lens of disassembly helps us problematize the 'unmaking' of high-carbon materialities by examining heterogeneous temporalities underpinning various processes of disassembling. More specifically, we problematize these heterotemporalities from two distinct, but interrelated scholarly vantage points associated with disassembly: one concerned with decay, namely how future expectations of decarbonised societies turn material lifeworlds of today into tomorrow's ruins; and the other focused on lingering and heritage, bringing to the fore the multiple ways in which these high-carbon materialities of the past/present are folded into the future. By doing so, we argue that imaginaries of low-carbon futures are not constrained to unitary and linear timescales concerned with assembling, things. Rather, low-carbon (energy) futures necessitate processes of disassembling that entail heterogeneous

experiences of time suspended between memory and abandonment, nostalgia and neglect, finality and regeneration.

Frontline Professionals - nurses' valuation work in Covid Care, *Syb Kuijper, Erasmus University Rotterdam, Martijn Felder, Roland Bal & Iris Wallenburg, Erasmus University Rotterdam*

In this paper we study how frontline nursing professionals are engaged in both the organization and delivery of Covid care, in particular how different socio-technical practices of valuations interact. We build on previous literature that contends organizing as a natural part of work for modern nursing professionals (Allen, 2014) and examine how nurses valuation work interferes with Covid care. We understand valuation work as the different actions by professionals to balance, defend and accomplish values in emergent organizational practices and decision making (Wright, 2020). Through ethnographic fieldwork (in two Dutch hospitals) and interviews (N=20) with nurses, we show how nurses work under great pressure (e.g. workload, lack of (staff) resources, changing team compositions), act based on both formal and tacit knowledge and continuously balance multiple values and priorities on different organizational levels and with various actors. In doing so, we seek to move beyond apparent professional values usually described in nursing and STS literature and demonstrate how valuations emerge, meet and are segmented in different spatio-temporal orders. We extend the literature of professional nursing valuation work by revealing how these values (e.g. timely care, humane care, patient safety) shape decision-making and the quality, safety and efficiency of care in high complex crisis organizations. Hence, this study lays the groundwork for more involvement of nurses' organizational logic in (emergent) management and policy decision making regarding the challenges of the pandemic and beyond.

Calculating Empires and Open Source Ambassadors: constructing banking futures through organising Fintech, *Jack Kværno-Jones, Copenhagen Business School*

Studies of technological innovations have highlighted the discursive and material construction of the future (Geiger 2020, Meyers and Van Howeghen 2019, Schiølin 2019), while the means of imagining technological futures has been tied to both political power (Jassanoff and Kim 2015) and processes of depoliticisation (Sismondo 2020). The Fintech sector, financial technology developments across corporate banks and small start-ups, prompts contested visions of banking futures, inviting investigation into the semiotic operations of convergence or translation in these assemblages and their 'grip on the future' (Muniesa 2019: p. 58). Within established banks, Fintech futures are negotiated through articulations of organisational politics, translating agendas through calculating hierarchical empires of formal organisation. While FinTech start-ups cultivate radical future visions through distributed community 'ambassadors', foregrounding politics as moral claims

around fairness, inclusion, and trust. How should we understand these forms of 'politics', which seem to emerge through organisational negotiations of what it means to be a bank, and their embroilment in sociotechnical constructions of the future? Drawing on 30 semi-structured interviews with financial professionals, document analysis, observations at industry events and an online Fintech Telegram platform, the paper explores how the socio-technical emergence of politics relies on and constructs certain futures.

Political Metallurgy: Functionalizing Copper in Swedish Nuclear Waste Management, *Hannes Lagerlöf, University of Gothenburg*

Metallurgy is a science of metals and has political applications because the objective properties of metals are perceived to correspond to social interests. In scientific cultures, political controversy may therefore materialize as conflict over metals' properties. This article analyzes a Court case where the nuclear industry tried an application to build a repository for nuclear waste. For the industry, the stability of copper is crucial because copper canisters have to encase nuclear waste for 100 000 years. In Court, it was not political controversy but scientific controversy over copper corrosion that became central for both activists and scientists. They focused strictly on 'the scientific' while 'the political' was rarely addressed. Yet, the political was the fuel of the scientific controversy. This article details this 'political fuel' and establishes why copper corrosion is assigned importance in the practices of the subjects in Court. By utilizing Critical Constructivism I argue that the scientific controversy is an unintended consequence of technocracy. The lack of democratic possibilities for influencing technology development has rendered copper corrosion central for actors who for very different reasons seek to stop the repository. Instead of technifying politics which technocracy once achieved, the opposing actors implicitly politicized technology.

Valuing future oil: 'Tools of valuation' and the governing of Norwegian oil resources, *Bård Lahn, University of Oslo, Kristin Asdal, University of Oslo*

New global climate targets have made the future of oil increasingly contested – even in oil-producing countries like Norway. In recent years, national controversy over how to govern oil resources in line with climate targets has been closely linked to a specific financialized way of valuing oil. The heated discussions about the future value of oil call for analysis of how, precisely, future oil is being valued, and the specific tools and forms of expertise involved.This paper shows how the valuation of Norwegian oil resources has shifted over the last half-century. While oil in the 1970s was valued in terms of the industrial activity it would generate, from the late 1980s it was increasingly valued as a national 'asset', in terms of the present worth of expected future revenue. This had wide-reaching implications for the governing of oil, as well as for current controversies about its future.Through this analysis, the paper contributes to the field of valuation studies by

bringing it into closer conversation with governmentality studies. This enables us to explore how valuations play out by way of what we call 'tools of valuation' – tools that move across markets and government, as well as across finance and politics.

Could stakeholder engagement contravene democratic environmental decision-making?, *Catharina Landström, Chalmers University of Technology*

Stakeholder engagement is pitched as the solution to a lack of uptake of science in environmental management. Research funding agencies require that grant applicants present detailed plans for stakeholder engagement at the outset. Although acknowledging the need for environmental scientists to engage with society is laudable the insistence on tying researchers to existing stakeholders at the inception of a research project raises important issues in the context of environmental decision making. The pre-project application engagement with stakeholders gaining ground today may contravene wider public engagement with environmental decision-making. From an STS perspective on publics as constituted through matters of concern inviting predefined stakeholders to co-design research projects is questionable. If new knowledge brings new social actors into being pre-formed bonds with established actors may preclude the emergence of new collectives. Research projects risk focussing only on the matters of concern to the powers that be and generate knowledge supporting ideas that there are no alternatives. To some societal actors becoming formal stakeholders in multiple projects becomes a strategy to ensure political status quo. Those most interested in becoming stakeholders are often actors with power. This presentation draws on an ongoing environmental project for critical analysis of this issue.

Living on the loop - agency, skill and (re)enchantment in DIY Artificial Pancreas System use, *Henriette Langstrup, University of Copenhagen, Bryan Cleal, Steno Diabetes Center Copenhagen, Jonathan Garfinkel, University of Alberta*

Cultural narratives associated with artificial intelligence (AI) and machine learning (ML) often evoke fears of de-humanization, de-skilling and disenchantment. In this article we explore a set of patient narratives in which different associations are generated; where AI, automation and use of control algorithms serves to reanimate agency, where the work of achieving automation generates knowledge and skill, and where descriptions of the experience evoke concepts of charisma and enchantment. The case we explore relates to user-driven innovations in technology used to treat type 1 diabetes (T1D), sometimes referred to as Do-it-yourself Artificial Pancreas Systems (DIYAPS). Recalling Haraway's well-rehearsed notion of the cyborg as well as more recent discussions of implications of AI, we explore our informants' engagement – not only with technology, but also with the broader community of fellow "loopers" and with the enchanted vision of living "on the loop". Users' experiences of agency, skill and (re)enchantment is thus not narrowly related to individual prosthetic

agency, but also, in equal measure, to new collective engagements with health data and technology. Moreover, we propose to assess whether the optimist experiences of "living on the loop" expressed in our data may provide inputs to broader discussions of how we may shape our engagement with AI" in the wild" in more human-centred ways.

Institutional logics of open science in university-industry collaboration, *Annina Lattu, Tampere University, Yuzhuo Cai, Tampere University*

While university-industry collaboration, characterized by academic capitalism and patent protection, has tended to be institutionalized, this field is encountering challenges derived from the movements towards open science. Our paper investigates how has the recently introduced open science policies changed institutional constellations in the arena of university-industry collaboration—an uncharted research area in the STS field. To fill the research gap, we raise the research question: How has the concept of open science been perceived by participants of university-industry collaboration? To approach the research question, we chose Finland as the case of our empirical investigation. Our empirical data consists of 16 semi-structured interviews with participants from two kinds of university-industry collaboration projects as well as relevant open science policy documents. We apply the institutional logics perspective for identifying patterns of perceptions of participants in universityindustry collaboration, such as universities administrators, academics and industrial partners. Our initial analysis reveals four types of institutional logics of open sciences, namely 1) democratic logic, 2) professional logic 3) corporate logic and 4) market logic. Our study's link to the conference theme is that, if open science movement is not studied thoroughly in different practical academic contexts, we have unknown unknowns – concerns we are not be able to imagine.

(Tele)caring in pandemic times: Ethnographic accounts of the implementation of video consultations in outpatient clinics, *Cæcilie Laursen, IT University of Copenhagen*

Telecare has long been imagined as a solution which offers a more flexible and efficient healthcare system because it allows patients to receive care in their homes. During the Covid-19 pandemic, the opportunity to provide care at a distance has rendered telecare extremely relevant in order to limit the risk of spreading the virus. Hospitals across two Danish regions have implemented video consultations as a response to the pandemic. Many consultations are currently postponed or held via phone, but the video consultation allows clinician and patient to see each other via camera and in this way reinstate some of the visual cues from an in-person consultation. This paper follows the work of clinicians as they adapt to this new form of consultation, and the observations provide unique insights into how clinicians, patients, technologies, etc. participate in establishing the means for care to continue in the face of a pandemic. At the same time, the swift and vast digital

transformation which is currently happening stipulates an opening for investigating how the future healthcare sector is constructed in the present.

Algorithmic absences: Examining the composition of absence in data practices, *Francis Lee, Chalmers University of Technology*

This paper argues for the importance of analyzing the making of absence in practice. Absence is the taken for granted category that bounds and delimits the matter of concern. Absence is the thing that we are not after. That which we take no interest in. That which is discarded. At the edge of the data that matters. As such absence is often left unscrutinized—but absence is just as precariously enacted and composed as presence. This paper analyzes how a set of actors construct absence in their work to predict disease. Based on fieldwork at the European Centre for Disease Control and Prevention, the paper analyzes how the seemingly straightforward absence of disease breaks down into a multitude: absence of data, absence of cases, absence of modelled risk, as well as simulated "pseudo absence." In practice, the simple category of "no disease" turns out to contain many layers. This case points to the analytical importance of not just paying attention to those things that are made present in the world, the matters of concern, or the facts of the matter—but also to the making of absences, nothings, and blank spaces. In attending to the making of absence, the paper seeks to highlight absence as a crucial category to pay attention to in critical analyses of algorithms AI, and, Big Data. How to analyze that which bounds the matters of concern?

Doing and undoing food waste: Transition towards the circular economy and the practices of valuing food (waste) at retail stores, *Taru Lehtokunnas, Tampere University, Olli Pyyhtinen, Tampere University*

Food waste is a key issue in the sustainability of the food system, and reducing food waste is part of for example the EU's circular economy strategy. While the food waste produced by households has been examined from a wide range of perspectives in the social scientific waste studies, research on retail food waste has so far adopted a much more narrow technical stance, focusing on top-down managerial practices, the quantification of food waste, and various business models for the circular economy. Based on an ethnography in a supermarket in Finland, this presentation supplements current understanding about the transition towards a circular economy by examining the mundane socio-material practices involved in sustaining the retail business. The presentation draws inspiration from new materialist approaches and STS. It explores food as vibrant matter (Bennett), through which we encounter different bodies and arrangements, and which may also unexpectedly change its appearance, texture and chemical composition. Because of this, valuing food and food waste at the supermarket requires constant maintenance and tinkering. In the presentation,

we will point out how food waste is normalized in the everyday practices and, above all else, framed as an economic issue in the supermarket.

Welcome to Whenever. Exploring Suspended Life in Cryopreservation Practices, *Thomas Lemke, Goethe University Frankfurt am Main*

Today, cryotechnological practices are not only an important infrastructural precondition for many medical applications and a crucial engine of bioscientific innovation, but they also provide new options for individual reproductive decision-making as well as novel solutions for preserving biodiversity on earth. The talk starts from the observation that cryopreservation inaugurates a particular "form of life" that arrests vital functions in order to re-activate them in the future. I argue that the concept of "suspended life" best captures the liminal state of being in which a cryobiological substance is neither fully alive nor ultimately dead. The talk explores the hybrid nature of suspended life and fleshes out how it changes temporal pathways and spatial configurations. The first part analyses temporal liminality as cryopreservation practices enact suspended life by extending the present into the future. I rely on Niklas Luhmann's account of time that puts forward the idea of an enduring present bound to the principle of reversibility. The next part engages with spatial liminality as the emergence of cryobanks allow to store and distribute forms of life to make them available for different technoscientific projects. Referring to Martin Heidegger's concept of the "Bestand" (the standing reserve), I analyse cryobanks as storing facilities that render biomaterial available and disposable.

The atmospheres of patient mobilisation: gynaecological cancer activism and the study of collective concerns, *Lisa Lindén, University of Gothenburg*

In this presentation I discuss my postdoctoral project in which I, during latter years, have been conducting ethnographic fieldwork with a gynaecological cancer patient organisation in Sweden. I relate to the STS agenda around "evidence-based activism" (Rabeharisoa et al., 2014) and "research in the wild" (Callon and Rabeharisoa, 2003) that emphasises STS research around patient activism as a study of (the assembling and mobilisation of) collective concerns. While finding this perspective immensely helpful in describing the patient organisation's mobilisation of knowledge, during the project I have found it wanting with regards to the more affective qualities of patient mobilisation (as discussed in Lindén, 2020; Lindén and Singleton, 2020). I describe how I have come to work with the notion of "affective atmospheres" (Anderson, 2009) to attend to the performative effect of often fleeting and elusive affective qualities such as bodily movements, laughter and tones at meetings and events. Drawing upon my project, I discuss how the notion of affective atmospheres might help STS researchers in describing aspects of the making of collective concerns easily overlooked when such concerns are conceptualised as primarily epistemic and material matters.

The image of research synthesis – a case study on systematic review process at the Swedish institute of educational research, *Annika Linell, University of Gothenburg, Ingemar Bohlin & Morten Sager, University of Gothenburg*

The image of research synthesis – a case study on systematic review process at the Swedish institute of educational research. Reproducing the infrastructure of evidence-based medicine, a number of agencies have been set up to synthesise research findings and communicating them to teachers at various levels of the education system. This is the primary function of the Swedish institute for educational research (SIER), which was established in 2015. Critics of SIER's systematic reviews have argued that the highly formalised manner in which they are produced leaves little if any space for exercising judgement. At face value, SIER's reviews are indeed strictly formalised, following an aggregative logic. Based on a close reading of two systematic reviews, the interplay between formalisation and expertise and the usage of a configurative logic when synthesising research, is made visible. This mismatch between "front-stage" and "back-stage" is common in scientific practice. The use of a mechanical objectivity for legitimising the work at SIER becomes somewhat of a boomerang. They are criticised for something they are not responsible of. A solution to the problem could be to acknowledge nonformalized expertise, instead of favouring one side of the coin. These findings could supply us all with more realistic expectations on what contributions agencies such as SIER can offer, when it comes to the modern knowledge society.

Constructing a 'just' future: Technoutopian visions of the graduate labour market, *Olga Loza, University of St Andrews*

If the future appears concerning to us, it is a source of optimism, hope, and profit, for the visionaries of the tech world. Silicon Valley's technoutopian fantasy conjures technology as a solution to today's concerns. This brand of technological solutionism suggests that technology holds the possibility for a better future. In this paper, I will examine how technologies are implicated in the construction of the future through an empirical study of the graduate labour market. This labour market is a peculiar place, an antechamber to the future, as graduates are on the cusp of being the future workforce. Technologies of graduate recruitment therefore give shape to this future. But what shape? I focus on the technology of the hackathon—a gathering of programmers, developers, and designers who participate in joint software production—and examine how it is deployed in one multinational financial corporation's attempts to construct a 'just' future through what it deems the meritocratic allocation of jobs. I pay particular attention to how the company's concern with a just future intersects with other concerns: organisational hierarchies, limited resources, corporate strategies. Mine is an STS-inflected study of how attempts to deploy the technology of the hackathon to construct a just future are bound up with socio-material relations, and

constantly contested. Messy present intervenes in utopian future, and the world that is brought into being in the offices of the firm I studied is not quite the fantasy world of tech visionaries, though they are mutually entangled and constitutive.

Urban Vision after the computational turn, *Anders Koed Madsen, Aalborg University, Sofie Thorsen, Aalborg University*

During the last two years, researchers from TANTLab and employees from GEHL architects have pursued experiments in urban cartography. Driven by a shared interest in exploring how digital methods could expand the traditional 'GEHL lens', we have set ourselves the task of using digital traces from social media to make the 'life between buildings' legible in new ways. One outcome of these experiments is this interactive cartography of Copenhagen's political diversity: https://tantlab.gehlpeople.com/. Based on interviews, fieldnotes and video-footage, this paper critically discusses how these experiments intervenes in the existing 'professional vision' (Goodwin, 1994) of the architects. This will be exemplified by diving into three tensions that emerged between the existing professional vision and the affordances of digital methods during the experimentation. The first concerns the commitment of architects to a physical conceptualization of space, the other concerns the professional commitment to demographic categorizations of social groups and the third concerns the epistemic vantagepoints from which the city can be observed. Since these new modes of datafying the city brings with them new urban ontologies and ways of making the city a future matter of concern, the paper contributes to the NSTS theme through an interventionist lens.

Future as a mode of making a presence. A case of male eating disorders, *Piotr Maron, University of New South Wales*

The starting point of this presentation is that the 'maleness' in eating disorders (ED) constitutes an ontological disturbance, an interruption, a thinking otherwise in relation to 'the standard' – female EDs. Specifically, this paper is interested how male eating disorders are emerging in time and space and what it means for the future. Hence, through the analysis of infographic resources published by two key Australian eating disorders organisations, I will explore how past, present and the future come collectively together making male eating disorders a matter of concern. Employing the category of absent presence, I ask how maleness and male eating disorders are ontologically situated in time. The dichotomy of being both absent and present allows to capture the particular ontological register of the disorder. Therefore, I interrogate how particular infographics mobilise past, constitute present realities, imagine, and promise the future through the usage of statistics, calculations and numbers. On the other hand, the analysis of the infographic data shows how the future is discursively enacted as a promise for better treatment, care, and recovery.

Future technology meets regulation of yesteryear: The invisible leadership work of making an AI project compliant, *Frank Meier, Copenhagen Business School*

This article offers a way to make visible the otherwise invisible leadership work that goes into making an AI project compliant to data regulation. While technological development accelerate the social (Rosa, 2003; Rosa and Scheuerman, 2009), democratic governance and regulation does not so much (Rosa, 2005). Regulation is in a way trying to catch up with the rate of technological development, catching AI projects in the crossfire. Taking data regulation in an Artificial Intelligence (AI) project in public sector as case, the article inquires how project participants works to mitigate a potentially fatal legal complication during key project meetings. Applying a communication as constitutive of organization (CCO or 'ANT meets interaction') (Kuhn et al., 2017) lens, the analysis demonstrates how compliance itself is mutable and an effect of conflictual processes of negotiation, mobilising diverse types of authority. Yet, project participants continue to move the project forward throughout, partly by articulating what compliance is compliant with. By understanding project leadership as 'the process of influencing others to understand and agree about what needs to be done and how to do it, and the process of facilitating individual and collective efforts to accomplish shared objectives' (Yukl, 2013: xx), leadership becomes visible as an interactional and mundane accomplishment involving several project participants, beyond the project manager. The article concludes by discussing contributions to extant project leadership literature and highlights in more general terms how digitalization studies and project studies may benefit from using communicative approaches.

Trusting professional discretion: The place of professional judgements in data-driven governing, *Marie Meilvang, UCL University College, Anne Marie Dahler, UCL University College*

In recent years, the promise of artificial intelligence and algorithms to make bureaucratic processes more efficient and minimize 'subjective' judgement and hence professional discretion in case management have made Danish politicians and municipal managers experiment with new technologies (Justesen & Plesner 2018, Pors 2015), among other places in social work. This has the potential to change professional work practices in social work, influencing the way citizens, politicians, and professional themselves view their work and role. By combining the sociology of professions and Actor-Network-Theory, two theories not usually combined (although see Eyal 2013), we investigate the concept of professional discretion. Even though some technologies remove professional discretion altogether, in social work the relationship between professional judgement and algorithms is much more complicated, reconfiguring issues such as trust and mistrust between professionals, citizens and the political system in new ways. Drawing on documents and interviews with municipal and professional actors, we investigate the current concerns and expectations relating to

algorithms in social work and the way this new digital-social arrangement reconfigures the role and importance of professional discretion and judgement.

On the intrasist and speaking in voices, *Katrine Meldgaard Kjær, IT University of Copenhagen, Line Henriksen, IT University of Copenhagen*

In this paper, we propose the 'intrasist' as a figuration with which to think and imagine the role of the scholar of the future differently. Through the lens of feminist STS and writing as critical and creative method, we suggest that the 'intrasist' may offer itself as a guide to the scholar of the future when attempting to address questions of vulnerability, concern and collectivity as an inherent part of doing academic work. The 'exorcist' as we know it, for example from popular culture, primarily concerns themself with the expelling of that which is more than one, that is, the work of distinguishing voices and the speaking 'I' from spirits within. In contrast, the figuration of the 'intrasist' functions as a guide in the process of speaking with and acknowledging voices both beyond and part of the self. This makes it possible to address lived experiences both strange and familiar, as well as what we argue is the inherent relationality of the researcher; no subject is singular, whole and bounded, but always collective, multiple and in becoming through their work in but also with a vibrant world. We suggest that we need new conceptual and creative tools to work with and address such multiplicity and collectivity in academic work in order to respond and attempt to address oneself to a world of strangers that are always to some extent already inside.

Matters of Arctic sleep: Hospital staff's shifting sleep routines and its devices-in-use, *Julie Mewes, Ruhr-Universität Bochum*

Hospital staff belongs to a high-risk group suffering from sleep deprivation and sleep disorders while its work environment demands a high level of concentration, rapid decision-making, and empathy. Nurses and MDs working night and day shifts above the Arctic Circle in Norway are additionally challenged by extreme circadian changes during the polar night and midnight sun periods. These specific work and environmental conditions lead to the assumption that Nordic hospital staff is particularly challenged when trying to manage a healthy day-night rhythm since they necessarily and continuously sleep outside of the circadian rhythm. Practice-based ethnographic interviews with Nordic hospital staff in their respective homes serves as an impetus for better understanding the conditions of the subjective meanings of optimal sleep for this group, their sleep patterns, and related day-to-day practices. The paper concludes with possible indications for a re-definition of sleep from something nonconditional or 'natural' towards becoming a new 'arena' of self-management, and/or rearrangement of day/night rhythms. This problem context is relevant to STS conversations on the entanglements of daily practices and its matters (Puig de la Bellacasa 2011, 2017) as much as scholars with an interest in practice-oriented studies

on the relation between sleep, time and the self. Keywords: shift work, sleep enhancement, sleep devices and routines, polar nights/midnight sun, materialities, temporalities.

The Collective Cyborg Body, *Juliana Michelon, Goethe University Frankfurt am Main*

In my research, I seek to describe the phenomenon of a collective cyborg entity that emerges from the complex entanglements of organic bodies and technologies. First, I offer a literature review on cybernetics and posthumanism and explain how the concept of feedback loops gives us a proper understanding of cybernetic organisms in the posthuman condition. Secondly, I explore a philosophical understanding of 'technologies of the body" and point to how the Foulcauldian and feminist perspectives see the body as a question that hangs between materiality and subjectivity. I then provide four case studies to show how cyborg technologies are connecting humans to the Internet and giving rise to a complex large-scale techno-social infrastructure. Here is where I enter the ethnographic field: a private business organization that assembles global-scale communication networks. In the field, I observe the information exchange dynamics in the every-day practice of network assembly to explain how the techno-social apparatus performatively materializes a collective cyborg body that manifests distributed agency and cognition.

Capitalocene as travelling standards: considering the (im)mutability of dualist standards in literary fiction and education focusing inter-species relations, *Emilie Moberg, Stockholm University*

Feminist Science and Technology scholars point to the inherent capitalist, anthropocentric and dualist standards at work in current knowledge production on bio-diversity, morphology and inter-species relations. They propose the Capitalocene as a term pointing to capitalism as an epoch as well as a standard organizing nature and producing a capitalist world-ecology marked by the mass destruction of living species. One of the key features of the Capitalocene standard is the dualist application of society and nature as categories. Even though society and humans are identified as a threat to nature in climate change research, this threat is primarily constructed as external to nature, rather than as an intrinsic part of nature. In the present paper, two empirical sites where the Capitalocene becomes actualized and produced as a standard, with specific attention to the construction of dualist articulations of society and nature, will be considered; literary fiction and early childhood education. Two questions are posed: To what extent does the Capitalocene, in terms of dualist knowledge production standards, become actualized and made to work by different actors in these two sites? To what extent can the Capitalocene, in terms of dualist knowledge production standards, be considered as an (im)mutable mobile through their articulations in these two sites?

Fermenting Futures: towards an interspecies interdepence, *Kaajal Modi, University of the West of England*

The utilisation of feminised labour in the technological industry has deep roots, from NASAs "human computers" who performed the complex mathematics that allowed the US to win the space race, right through to the absorption of "waste pickers" in developing countries into a system of "e-mining" minerals from electronic components as a step towards a circular economy (Costanza-Chock 2018). In this paper, I will develop the material and metaphoric affordances of fermentation as developed in my co-creation project Kitchen Cultures, as a form of what the Care Collective term a "politics of interdependence". This is a form of universal care that is promiscuous, capacious and agile, and based on principles of radical kinship with others at all scales of life, both human and non-human (Haraway 2008; Collective 2020). Cooking is at once a DIY technoscientific process, and a creative methodology employed by women in the home in order to nourish and sustain. In cooking, we transform our food through two main methods: by applying heat; and by fermenting. It is the bubbles that create or indicate transformation, and it is within these temporary bubbles that, as Mercedes Vilallba has it, we can be transformed ourselves, through collaboration and cross-contamination of ideas and methods (Villalba 2019).

A mosquito, a population, a species, an ecosystem: Enacting ecologies in gene drive development, *Marianne Mäkelin, University of Helsinki*

How to kill a mosquito is something that malaria control strategies have struggled with for decades. While on one hand, malaria is caused by the mosquito-borne Plasmodium parasite introduced to human bloodstream, the disease is also connected to seasonal changes and migration patterns and living conditions of both humans and anthropophilic mosquitoes. Gene drive mosquitoes are a proposed malaria control strategy that uses a genetic modification that radically increases its heredity to disperse the malaria control tool across large areas and mosquito generations. As a novel cure for an ancient disease, it connects with the promissory economies and salvation narratives attached to CRISPR-Cas9 genome editing.While often figured as a single mosquito as the answer to malaria, this paper examines the gene drive mosquito in mosquito population dynamics and in the relations with the mosquito as an organism and its environments. I follow how in creating a scalable environmental malaria control technology, negotiating a disposable mosquito species plays out in enacting the mosquito as a laboratory animal, as a population, and in its ecological relations.

What is design worth? The assetization of design expertise, *Ulises Navarro Aguiar, University of Gothenburg*

This paper explores how cultures of capitalization are intersecting with and shaping the professional field of design. It uses 'assetization' as a conceptual category to make sense of recent developments in the design industry, such as the appointment of designers to executive roles in large organizations, the venture capital interest in 'design-led' start-ups, and the sustained wave of acquisitions of design agencies by management consultancies. It describes a narrative shift from design as an organizational resource for innovation to design as an asset considered from its capacity to deliver future earnings for shareholders. The study consists in an analysis of reports on "the value of design" by McKinsey & Company and the Design Management Institute, as well as a case study derived from an ethnographic inquiry of design work at a multinational corporation, in which the efforts of professional designers to turn their expertise into an asset are described. The paper draws on narrative approaches in organization studies as well as on recent STS scholarship on assetization. It ends by noting some critical implications of the asset condition in relation to design as a professional practice deeply engaged in the construction of futures.

Careful engagements, *Niels Christian Mossfeldt Nickelsen, Aarhus University, Doris Lydahl, Aarhus University*

We develop the idea of careful engagement as knowledge production. We do this by discussing the dilemmas that rise when researchers engage in the fields they study. In times where many grants come with partnerships with actors outside academia, we find this important. We identify key approaches to care. First, 'Care in practice' understands care as persistent tinkering and aims to study emergent values produced in situ. By being re-scriptive and suggestive, the researcher can open implicit notions of good care for reflection (Pols 2008, 52). Second, 'Critical care' is 'more than following the actors, less than showing the way (Bellacasa 2017, 143). Here, questions about exclusions produced in care are pivotal (Martin, Myers & Viseu 2015). In addition, critical care is interested in what we are encouraging caring for (Bellacasa, 2011, 92). Thus, careful engagements raises many pivotal questions. What inequalities do we risk producing? How can we do more than following the actor? How can we be suggestive? How can we make re-scriptions? What tensions do we meet during engagements? The presentation will provide empirical examples of careful engagements, as well as theoretical reflections in relation to these issues.

(Digital) Welfare for All? Disabled People and their Relatives as Participants and Non-Users in Denmark's Digital State, *Barbara Nino Carreras, IT University of Copenhagen*

Statistics seem to confirm that public sector digitalization in Denmark is a success because most citizens use public digital self-services, such as borger.dk or digital post (e-Boks). Yet, a recent disability rights movement called #enmillionstemmer (onemillionvotes) seems to disrupt such reality. The participation of people with disabilities and their relatives in protecting their rights within recent digital reforms is an underexamined field of study. In

this paper, I draw from Adele Clarke's situational analysis, to explore a mix of archival materials and interviews that compare the motivations of #onemillionvotes, and inclusion initiatives performed by the department of digital inclusion, under the Agency for Digitization. The paper questions whether mandatory digitalization in Denmark's public sector, excludes disabled people and their relatives in participating in, what constitutes equal and sufficient (digital) welfare. Building on literature from disability studies, participatory design, and feminist STS, I critically map out user research and participatory methods performed by the department of digital inclusion. The paper problematizes user research and inclusion strategies that understand disabled people as non-digital citizens, and speculates on participatory methods, led by disabled people and their relatives, that rework their role as equal service users of welfare.

English Higher Education market as a matter of collective concern, *Tamar Nir, King's College London*

In 2012, the English Higher Education (HE) sector went through a set of market-based reforms, a response to the problem of financing a growing sector under austerity. Most notably, the implementation of a form of student loans termed Income Contingent Repayment (ICR). Distinct as they link the present to the future through a speculative promise to pay, contingent on the student's ability to transform resources today into future value. Based on ongoing PhD research, the aim of this paper is to engage with the future of Higher Education as a collective concern through a temporal lens of student debt. In seeking to challenge normative prescriptions to the concept of student debt, this paper is a reparatively concerned exercise, a call to reflect on marketisation processes that have arguably deformed the HE sector. It attends to the ways in which the British government control future uncertainty by use of present financial practices. Specifically, this paper engages with a form of STS that attends to policy documents as a reference to the social processes through which an HE market has been produced. By observing voices of experts whom problematise specific issues of concern, the unintentional consequences of a future failure to repay debt bring forward voices of actors who demand to be taken into account. It is through this space, that a temporality of debt marks out the possibilities for thinking about the future of higher education as a collective, recalcitrant endeavour.

A monument of the future: The rise and fall of the Swedish national monument, celebrating the turn of the millennium, *Anna Orrghen, Uppsala University*

In December 1999, the Swedish national memorial celebrating the turn of the millennium was inaugurated. Tidsdokumentet was erected on behalf of the Millennium Committee, set up by the Swedish government. The commission to realise the monument was given to Chalmers University of Technology and the result became an interactive monument downtown Gothenburg. However, despite advanced research, cutting-edge technology and

the intention to create something enduring, the monument was deconstructed shortly afterwards. Tidsdokumentet was created in the midst of the dotcom bubble and was supposed to symbolize visions of scientific and technological progress. During the thirteen years that passed from the origin of the idea to the dismantling of the monument, the meaning of Tidsdokumentet transformed from being a promise of the future to become a reminder of the ephemerality of digital technologies. Thus, although Tidsdokumentet was intended to be part of the future, it literally turned into a part of the passed. From a STS perspective, Tidsdokumentet could be described as a projection site for visions of the emergent information society. By examining the history of Tidsdokumentet, this paper aims at shedding light on the socio-technological construction of the future as it is expressed through contemporary art.

Enacting Futures, *Kasper Ostrowski, Aarhus University*

In this presentation I aim to investigate how we - with the aid of narrative theory - might think about the ways in which futures are constructed. I propose 3 concepts from possible world theory (Doležel, 1998) as 'exotic' theoretical principles that could aid our understanding of future otherwisings. The field of STS has a long history of scrutinizing determinisms. Non-determinism has been widely promoted under the credo 'it could be otherwise' (Woolgar & Lezaun, 2013). However, less attention has been given to the hows of this principle. The hows of otherwising. How might we think (differently) about possible futures? Possible world theory offers a narrative framework applied in literary criticism in order to address taxonomies of fictional possibilities, notions of literary truth, the nature of fiction, and the relationship between fictional worlds and realities. Possible world theory thus deals with the constituents of narrative worlds. From this vocabulary I have found inspiration to investigate the ways in which we might talk about enactments of possible futures through saturation, minimal departure and world encyclopedias. These principles center on the incompleteness of narratives, the ways narratives are furnished and the sourcing of 'furniture'.

Legitimacy and time in technoscientific capitalism, *Karl Palmås, Chalmers University of Technology, Nicholas Surber, Chalmers University of Technology*

Responding to the call for interventions on the socio-technical construction of the future, this paper explores the how the concept of "technoscientific capitalism" may be understood in relation to time. Recent contributions in STS prompt scholars to engage with the political economy of science and technology. While these contributions tend to lean on politico-economic concepts such as rents (Birch, 2020) and assets (Birch & Muniesa, 2020), this paper will describe technoscientific capitalism in different terms. Revisiting the arguments of Lyotard (1984) – the originator of the concept – the paper investigates how technoscientific capitalism initially emerges in the context of a FrancoGerman debate on the

problem of legitimacy in late capitalism. The argument then explores how Lyotard subsequently moves on to describe technoscientific capitalism as a process of controlling futures, forestalling events, and annihilating time. The paper concludes by suggesting that this focus on time restates the stakes of technoscience capitalism, reorienting the view to examine the practices in which futures are locked-in by technoscience.

The Inclusion Office, *Irina Papazu, IT University of Copenhagen, Morten Hjelholt*

The Danish welfare state is one of the most digitally advanced in the world, and with digitalization reaching the forefront of the political agenda, the citizen has been expected to perform a transformation similar to that of the state toward 'becoming digital' (see Pors 2005). Since 2014, when it became mandatory for all Danish citizens to communicate with the state through the digital infrastructure 'Digital Post', digital citizenship as such has become a mandatory part of being a Danish citizen. With this ideal of the Digital Citizen, new exclusionary mechanisms have emerged, as not all citizens manage to live up to the requirements of The Digital State. In this paper, we use interviews and case stories to analyse the position of these partially or non-digital citizens vis-à-vis a state which is becoming increasingly concerned with including them, not least through the (re-)establishment of an 'inclusion office' in the national Digitalisation Agency. If this inclusion does not succeed, it is feared, the non-digital citizens will become invisible to the state, and the state in its new, digital reconfiguration will be out of reach for them. At the same time, for the digital citizen, the state has more entry points than ever before, giving rise to new forms of societal inequality. The renewed concern that the state shows these 'problematic' citizens, e.g., through its 'inclusion office', can be conceptualized as a type of 'care' with new, built-in power dynamics (Bellacasa 2010) that we wish to unpack.

Materiality in collective action: A review of material participation in energy transition, *Goeun Park, Aalto University School of Arts, Design and Architecture, Cindy Kohtala, Aalto University School of Arts, Design and Architecture*

Climate change requires socio-technical transformation such as transition to low carbon and renewable energy, and collective public participation is considered a critical social factor that can help accelerate the transition (Walker and Devine-Wrigit, 2018; Seyfang et al., 2013). The dynamics of joint energy action of citizens have garnered increasing attention of diverse disciplines including STS studies (Hyysalo, 2013; Sovacool et al., 2020). However, the role of materiality and its relation to collective agency, inclusion and participation appear to be less addressed in the literature as a matter of concern, even if material-inclusive approaches are considered by some to have greatest potential to foster alternative and democratic citizen involvement (Marres, 2012; Gabrys, 2014; Ryghaug, 2018). We thereby explore this gap by presenting the interim findings of a literature review on energy-related studies from various disciplines that explore community-based public participation. Alongside inductive analysis,

four key factors – location, usage, relationalities and role – are used to analyze energy materiality (Balmaceda et al., 2018). The findings show how materiality influences – enable, constrain or interact with – collective agency of citizens. The analysis also pays attention to how STS research does or can orchestrate such materialbased engagement as a matter of collective concern.

Caring practices during the pandemic. The case of Superbergamo, *Laura Lucia Parolin, Southern Denmark University, Carmen Pellegrinelli, Lapland University*

The COVID- 19's crisis has completely changed our perceptions challenging our understanding of how futures are constructed. In this paper, we aim to explain how the definition of the responses in COVID-19's crisis, is entangled with temporalities and perception of time, showing as conceiving different temporalities, standpoints, and futures provides creative practices. We focus on the case of a spontaneous organisation that promoted a food and medicine service during spring 2020 in Bergamo, the Italian city most affected by Covid19. During the pandemic's peak (March to June 2020), a group of people active in local cultural and social associations coalesced around a social project of sustaining people in need. The group called SuperBergamo quickly became a crucial player for the emerging needs of the community during the pandemic. Considering Super's sociomaterial entanglement as a care practice (Puig de la Bellacasa 2011) we intend to overcome the idea of linearity of the dominant time of Chronos to grasp the transitory co-presence of multiple time zones in a continuum (Braidotti 2019). To do that, we propose to use the Deleuzian concept of Aion (Deleuze 1990) as an eternal and virtual horizon of potentials with the concept of Kairos (Jaques 1982) which makes the potentialities of the Aion real and present.

This is not a bus: standardization as ontological de-politization in public transport markets, *Alexander Paulsson, Lund University, Stig Westerdahl, Malmö University*

What is a bus? This question may seem trivial. It is obvious what a bus is for most of us. In this paper, we approach this seemingly trivial question on the basis of the different realities that buyers and sellers in the market for procured public transport market act upon. During the past decade, public transport as well as other modes of low-energy transportation have been positioned as key to a transition to sustainable mobility. Building upon the concept of ontological politics (Mol, 1999), we explore the question of what a bus is in the competitively tendered public transport market in Sweden by studying the development of a standard, specifying the properties of bus vehicles. Even though ontology is inherently political, in many circumstances the 'politics' in ontological politics is rarely visible, let alone discernable. This, we argue, has to do with the circulation and influence of standards, in our case standards on bus vehicles. In both STS and organization studies, standards have been debated for many years and led to a rich and valuable literature, yet their relationship to ontology remains obscure. Adding to Mol's (2009) observation that standards are "tinkered

with" in order to alleviate ontological politics, we conclude by outlining a theory of how standards operate as a method for generating ontological de-politicization.

How images of technology affects images of the future? A Latin American exploration, *Martin Perez, Arizona State University*

Images of the future are common in a future study to describe metaphors and cultural artifacts that offer a perspective into the possible worlds of tomorrow. These images mostly have a strong relation with emerging technologies and socio-technical imaginaries, produced by realities from the Global North. But, in times when new possible futures are needed to conciliate our relations with nature, peoples, and values, this research aims to describe the mechanisms in which socio-technical images are inserted in images of the future based on Latin American cases. This work reflects on the importance of images of technology as an analytic strategy for studying situated and intersectional socio-technical systems. Based on exemplar works from speculative designers, futurists, and creators in Latin America, I argue that images of technology are channeling societal assumptions on the future, as an economic dependency, patriarchal power structures, and lack of alternatives in Latin America, which affects the cultural reflection inside the region. In constant, Latin American futurists and designers from the diaspora (as such whose living in Nordic countries like Sweden and Denmark) overcome that cultural biases, empowering from beyond local efforts to rethink Latin American identities and futures beyond the doom of antifutures.

Embodied Partnerships, *Louise Permiin, Design School Kolding*

I apply for participating in the conference STS and the Futures as a Matter of Collective concern 2021 with a Ph.D.-project that questions the relation between danish textile-dyeing industries and their locations ecology to unfold a concern for their collective future. The project is called Embodied Partnerships and leans on Research Professor of sustainability, design, and fashion Kate Fletcher's argument that the growth of the industry, economies, and production has worsened the pollution of rivers, air, and global temperatures: creating an ecological urgency. An urgency I aim to explore through a cross-disciplinary practice merging quantitative environmental data studies from chosen textile-dying locations with embodied interactions. The project build upon Geographer Doreen Massey's theory on the inseparable historical connection space consists of. An inseparable connection with time which I aim to explore through embodied interactions on the locations past, present, and future. The project seeks to unfold if the textile-dying industries have constructed entangled relations to its surroundings over time and, if so, how its connected time can be experienced and lived out through an embodied investigation of today, creating a collective matter of concern on how to design with the future.

Back to the future: When past outsourcing practices constrain socio-technical futures in the UK public sector, *Jessamy Perriam, IT University of Copenhagen*

Past decisions heavily influence how we enact the future. After all, the past was once an imagined future at some point in time. Some past events and decisions support our socio-technical present in ways that are seamless and rendered invisible. However, other past socio-technical constructions often constrain and hamper the development of futures that we are ready and willing to implement. I use the example of the UK public sector's technology outsourcing in the 1980s and 1990s to describe their impact on current digitalisation efforts. In the 1980s, the UK civil service imagined a future where government technology was managed by suppliers, with this approach equally encouraged by management consultants. While this resulted in a windfall for the companies enacting the outsourcing, it represented poor value for money and a shortsighted, disconnected approach which did not anticipate sociotechnical advances three decades later. I mobilise the example of Aramis (Latour 1996) to suggest that the success of imagined futures depend on a commitment to care, maintenance and flexibility. I draw upon qualitative data from a series of interviews conducted with former UK civil servants and digital consultants to narrate the challenges that occur when attempting to retrofit technical decisions to imagined futures. To do this, I also describe the networks of politics and procurement at play in imagining future government technologies.

Embryos on camera: the travel of reproductive imaging from the lab to the social world
Manuela Perrota, Queen Mary University of London, Josie Hamper, Queen Mary University of London

In recent years, biomedical imaging has been one of the fastest growing areas within scientific imaging. In the STS literature, some authors propose an analytical distinction in the study of scientific imaging: image production, engagement (how images are used in professional practices) and deployment (how images circulate among professional and non-professional networks). These three phases have been studied separately and from different perspectives and disciplines. Analysing the case of embryo imaging in IVF, in this paper we explore the travel of biomedical images from the lab to the social world. IVF is a primary case for the study of biomedical imaging. The advancement of IVF imaging technologies has been refocusing the discussion on the unborn patient at the cellular level, where images of embryos and gametes play a central role in contemporary imaginations of reproduction. Drawing on extensive ethnographic research, we explore how embryo images are co-produced in a certain community of practices and then travel beyond that community, especially among patients and their families. This paper aims to contribute to the STS literature on scientific imaging by exploring the complex relations between image production, engagement and deployment that have only been marginally examined by previous studies.

Green Gold – translational science on living cell factories and the hope of engineering metabolisms to enable a sustainable future, *Eva Vibeke Kofoed Pihl, Roskilde University*

Residual biomasses from industrial agriculture, fishery and forestry have recently been labeled a "green gold", which is to enable Denmark's turn away from fossil-fuel dependence and transition into a bioeconomy. The nexus of the transition is to come from science using metabolic engineering to establish cells as living factories capable of converting biomasses thereby creating an ecologically closed loop. While the goal of these metabolic conversions is to enable a sustainable future, the work of living cell factories is also tied to a promise of Denmark's becoming a leader in the emerging bioeconomy. Yet, even a surface look at the concepts and profit motives involved in these scientific practices suggest that the emergent bioeconomy may be trapped in what Tsing (2015) calls a dangerous cycle of ruin and promise. To obtain a closer knowledge of the practices of science, this project will follow the various ways that time is involved in science on cell factories at DTU Biosustain Denmark, a research center including collaborations between scientists and cells creating metabolic conversions to enable sustainable biotechnologies. The aim is to show how the promise of a sustainable future involved in science on cell factories center on practices to both manipulate and negotiate time in conversions between cell and scientists, biotech industry and macro policies.

Keep open! Methodological agnosticism and engagement in evidence-basing disability care, *Isabella Pistone, Gothenburg University*

The interdisciplinary field of STS has long provided space for projects that extend beyond academic texts in order to make STS knowledge travel. In the last decade the content, forms and scope of such work has rapidly evolved and STS has now expanded to a range of disciplinary areas as well as heightened the field's engagement with public institutions outside the university domain. In this paper I report on some of the methodological challenges encountered during a situated intervention at a social care provider. The intervention was part of a research project that aimed at exploring the potential shapes of evidence-basing within disability care practice at a social care provider in Sweden. The experiment consisted of "infusing" evidence-basing into existing structures of improvement work at the care provider. The case lends itself to a discussion and analysis of the possible roles of the STS scholar when engaging in practices. I will argue for the need to "keep open" and not intervene too quickly based on presupposed assumptions either from within the practice or from previous STS-learnings. Several episodes in the case highlight the careful interplay between methodological agnosticism, reflexive learning and attempts to engage in and improve welfare practices.

The production of end-user flexibility in Norwegian experts' visions of the future, *Outi Pitkänen, Norwegian University of Science and Technology*

The concept of end-user flexibility has gotten considerable traction with efforts to develop smarter energy systems. It is closely connected to the idea of changing the energy demand structures instead of increasing capacity on the supply side. Thus, it also proposes a larger role for ordinary households in the management of the energy system. The Norwegian case poses a quite unique example for two reasons. Firstly, end-user flexibility is not connected as tightly to the production patterns of variable renewable energy. Secondly, the ongoing electrification of the transport sector is already putting pressure on weak local grids and is seen to be significant also nationally in the long run. Drawing on perspectives from the Sociology of Expectations, experts on Norwegian electricity sector were interviewed about the futures they envision for end-user flexibility in Norway. The interviews touched upon both the ongoing grid tariff reform and the efforts to build flexibility markets. The interviews have been supplemented with documents from the Norwegian public hearing on grid tariffs. The interviews show an ambivalence to the ongoing grid tariff reform. While many are steadfast in their belief that the main issue is the distortions in current price signals, others within the industry highlight the importance of simplicity for communicating and understanding the message that the reform should send. This point of view is brought to the fore also by consumer organisations, painting a future of an even more incomprehensible electricity sector where a significant response to such price signals should not be expected. Flexibility markets, on the other hand, is flagged as a safer choice for those who don't put a lot of trust in activating people. Here participation of ordinary households happens necessarily through automation, which enables both simplicity – people won't need to respond to price signals themselves – and reliability as procedures to verify the "dispatch" of flexibility are being developed, although this quantification is not quite straight forward methodologically. While a great deal of effort is being poured into both grid tariffs, flexibility markets, and all their variations, there are more sceptical voices, especially from the grid planning front, which are not convinced that end-user flexibility will be the preferred option to the good old cable.

How Hype Begins and Ends: The Gartner Hype Cycle and Product-based Expectations, *Neil Pollock, University of Edinburgh*

Technological expectations or 'hype' play an important role in shaping not just the creation and adoption of technologies but also the functioning of the economy. At the centre of this shaping process are tools used by investors to decide whether to risk the early adoption of emerging technologies or wait till their prospects are more clearly established - Gartner Hype Cycles. Through drawing on interviews with Gartner analysts about how they plot technologies along a curve of over enthusiasm and disillusionment, we explore the conditions under which hype surrounding promising technologies is judged to have begun

and ended. We conceptualize the production of Hype Cycles not just as the outcome of promissory behaviour as would be done by the Sociology of Expectations but as expectation-based products. As such, we show that Gartner create and sustain the Hype Cycle through embedding it in an internal 'inventory'. We identify how this inventory creates a space for debate, how it made the reuse of components between Hype Cycles possible, but also how its use required inventive efforts to resolve specific problems created. Our analysis shows that while the beginnings/endings of hype might have multiple origins, some of these can be found in this inventory. Through revealing the importance of commodification processes for the origins of hype, our paper points to a future research agenda on product-based expectations.

The depletion of boundaries through forensic DNA phenotyping technology, *Filipa Queirós, University of Coimbra*

Forensic DNA phenotyping (FDP) technology uses biological samples found at crimes scenes to infer probabilistic information about externally visible characteristics of suspects, such as eye, skin and hair colour, and also biogeographic ancestry. The legal landscape regulating the use of FDP in Europe is ambiguous and only explicit in the Netherlands, Germany and Slovakia, which allows its application, and in Austria and Belgium, which prohibits it. Drawing on interviews with forensic geneticists and a group of stakeholders in Germany, the Netherlands, Poland, Portugal and the United Kingdom, this article explores how these professionals perceive the existing boundaries and legal settings regarding the use of FDP. I propose the concept of depletion of boundaries to reflect upon FDP's effects on the meanings ascribed to the existing boundaries, as it allows to understand the fluidity, mutation and the emptying of the meanings attributed to existing boundaries and capture the different meanings attributed to the distinction between coding and non-coding regions of DNA. The article also points to a potential reconstruction of existing ethical boundaries, meaning that current ethical boundaries circumscribing DNA uses may be replaced by a new boundary where what is publicly seen is considered as not being ethically sensitive.

Importance, expression, understanding: modes of thinking the future collectively, *Felipe Raglianti, University of Chile, Yenny Díaz, Alberto Hurtado University*

Current methods in Social Science are often subordinate to theory, also research tends to exhibits a certain individualism and extractivism of information (Law 2004, Lury & Wakeford 2012, Back & Puwar 2012). With the help of colleagues from Art and Pedagogy we are inventing techniques to avoid this custom and to promote more collective ways of conceiving, learning and inheriting knowledge about the future. We are interested in knowing especially what is the importance that children assign to the future. We have successfully tested drawing things that they attach importance to. These objects are the initial data that the method produces. Later this information acquires more definition

through performances designed by teenagers, who give expanded expression to what is important for the children. A third application then explores the understanding of adults of the expressions that teenagers make about the importance assigned by children to the future. As the research grows the data is collected in objects that are actively developed with each application of the method. We work under the assumption that the future is real but not actual, so we aim to supplement this with imagination combined with the lure of Whitehead's speculative reason (1968) and Haraway's material-semiotics (2016).

Temporalities of Covid-19 responses: how time influences public values and responsibilities within decision-making, *Sabrina Rahmawan-Huizenga, Erasmus University Rotterdam*

This paper describes the results of an anthropological study of decision-making within the Covid-19 crisis, in one 'safety-region' – the organization responsible for crises and disaster control – in the Netherlands. The first author conducted non-participatory observations of crisis-meetings starting March 2020 and proceeding to this day, as well as interviews with key actors. Being fully embedded gives us the unique opportunity to see how the Covid-19 crisis management unfolds.We highlight that in the regional governance of the Covid-19 crisis different temporalities are at play- or in other words- different actor experience time differently. We identify a flash time-logic, the logic of firefighting, of acting now with limited knowledge. In addition, a holistic time-logic in which there is space for nuance and validation of knowledge plays a role. These different temporalities have important consequences for the public values featuring in decision-making. We show how the dominant flash time-logic prioritizes safety as the most important value, moving other values such as accountability, democracy and social-economic values to the background. Moreover, the time logics impact the way responsibility is shared within a layered governance arrangement. The dominant use of a flash time-logic makes different values seem irreconcilable and prevents intelligent sharing of responsibility.

Predicting children at risk: Controversial algorithms and infrastructural attachments
Helene Ratner, Aarhus University, Kasper Trolle Elmholt, Aalborg University

Developments of predictive algorithmic technologies in public administration are increasingly turning into matters of public controversy. In this paper, we explore how predictive algorithms become a matter of public concern, arguing that this is not only a matter of discursive articulations but also relates to what we term 'infrastructural attachments'. With 'infrastructural attachments', we suggest that the public enactment of algorithms as controversial is contingent upon socio-material relations and assemblages that become part of and are shaped by particular development of algorithms. Empirically, we compare two Danish local government projects with algorithmic prediction of children at risk, which both have become a matter of public controversy in Danish media. While they

are similar in terms of their aim and target group, predicting children at risk for lack of well-being and, ultimately, forcibly removal from home, they also differ in their infrastructural set-up. These differences include which databases are made to connect in developing the algorithms, as well as the institutional arrangements of their development. This testifies to the importance of scrutinizing the particularities of algorithmic controversies and understand algorithms as part of wider socio-material infrastructural arrangements rather than abstract, computational formulas.

The future of STS: Including documents in the repertoire of practices - a method, *Hilde Reinertsen, University of Oslo, Kristian Asdal, University of Oslo*

In STS, ethnographic accounts of science-in-the-making and politics-by-other-means has long held the status as the method of choice for grasping practices as they unfold, both in the lab and in the wild. Yet, as rewarding as this has been, it has also served to eclipse other scholarly traditions,notably the text- and history-oriented humanities. It has also eclipsed other important matters of concern, notably how documents are often key to how practices unfold, issues come into being and governing happens. This paper proposes to reposition these methodological and empirical matters of concern at the heart of STS. Indeed, STS approaches used to be informed by texts and semiotics, as seen in the vibrant tradition of material semiotics and conceptual tools such as Shapin&Schaffer's 'textual technologies' and Latour&Woolgar's 'inscription devices' (Asdal&Jordheim 2018). In revisiting these original contributions and recombining them with the text-oriented humanities and the practice-oriented methods in STS, we put forward a method that we label 'practice-oriented document analysis' (Asdal 2015, Asdal&Reinertsen 2020, forthcoming 2021). In doing this, the paper presents six 'methodological moves' that enable us to better analyse documents in and as practice: 'document-as-site', 'document-as-tool', 'document-work', 'document-as-text', 'document-issues' and 'document-movements'.

Overcoming Opacity in AI-driven Autonomous Weapons Systems, *Karen Richmond, University of Copenhagen*

The requirement to standardise and regulate artificial intelligence has been lent fresh impetus by the inevitable expansion of algorithmic machine learning into the defense sector. The ability of advanced AI to drive lethal autonomous weapons systems (LAWs), necessitates the engagement, not only of legal, scientific, and policy experts, but also of STS scholars, whose interdisciplinary perspectives, and heterogeneous theoretical approaches may prove critical to meeting the challenges posed by this rapidly evolving, and multi-dimensional, iteration of data science. Critical engagements generated by the AI expansion have hitherto revolved around the interpenetrating issues of ethical responsibility and legal accountability. However, definitional ambiguity - and a corresponding lack of conceptual clarity – has served to generate obstacles which become exacerbated in relation to such a rapidly developing

technology, whose scientific, social, and legal dimensions elude easy categorization. In order to demonstrate the potential for STS scholarship to address this area of collective concern, this paper explores the comparatively underdeveloped issue of algorithmic opacity and LAWs, exploring the potential for opacity to impact on target discrimination and operational accountability. In closing, the paper suggests collaborative solutions which may empower contemporary academics - and allied institutional agents - to chart an interdisciplinary research agenda which may address seemingly insoluble challenges.

Batteries With(out) Scale, *Aleesha Rodriguez, Queensland University of Technology*

In 2017, a wager on Twitter between an Australian billionaire and Tesla's Elon Musk sparked online public debate and resulted in Tesla building, what was, the world's largest lithium ion (Li-ion) battery. By conducting a controversy analysis using digital methods for issue mapping, I analysed public comments (n =3,155) by Australian Twitter accounts about this event to explore their matters of concern. A key finding from this research showed that, to make sense of what was the world's biggest Li-ion battery, these publics drew on their everyday practices with energy and scale up their conception of small Li-ion batteries. I argue that the collapse in the scale of batteries generates important implications in terms of energy literacy and sustainability in an increasing digital (thus energy intense) society. Namely, considering Li-ion batteries without scale can reinforce existing unsustainable expectations towards energy demand and battery waste management. This paper contributes to ongoing conversations about our digital energy futures.

Following the pandemic on Reddit – Science enthusiasts' hyperlinking practices *Frauke Rohden, University of Oslo*

This contribution examines the hyperlinking practices in discussions of the novel coronavirus on the social media platform Reddit. The platform is organized into thematic sections with "science", "askscience" and "dataisbeautiful" ranking highly among the most subscribed to 'subreddits'. Additionally, special subreddits on the novel coronavirus have been created in 2020. However, beyond value for professional use on the one hand and discussions on misinformation on the other hand, little is known about the informal public engagement with science among these communities of science enthusiasts online. Social media can blur the lines between scientific and nonscientific content and increasingly emphasizes informal communication patterns. At the same time, informal groups forming around interests or issues online might show distinct behaviors tied to small subcommunities rather than large topics or platforms. Using digital methods, I examine the sources and formats referred to in coronavirus-related online discussions by and for informal communities of science enthusiasts on Reddit and compare the use of hyperlinks across different subreddits. The aim of this paper is to contribute to a more nuanced understanding of diverse online

communities' engagement with science and the role of online publics in the use, creation, and amplification of scientific knowledge.

Care in everyday life during the pandemic: results of CUIDAR study, *Sebastian Rojas Navarro, Universidad Andres Bello, Samanta Alarcon Arcos, Escuela de Gobierno, Pontificia Universidad Católica de Chile*

Worldwide, governments have implemented several policies aimed at containing the dissemination of the COVID-19 pandemic. In Chile, the government followed the example of countries such as Italy, forcing massive lockdowns, closing educational institutions, and encouraging social distancing and work from home. This has affected certain caring needs commonly met outside of the home, which now relied on the household for their satisfaction, modifying how they work. Once the webs of interdependence sustaining the everyday caring practices that we need become discontinuous, or are simply cut clean, how does this alter and modify how care is enacted, experienced, and understood within the households? The aim of this presentation is two-folded: First, it highlights the potentialities arising from an approach to care under the lens provided by STS scholarship. Secondly, we share some results of CUIDAR, a survey about care forms, times, and spaces of care conducted in Chile regarding the effects of the pandemic on everyday caring practices within the households. Responded by over 2000 individuals all over the country, CUIDAR reveals the significant role that spatialities and materialities play in caring, and how—during the pandemic—care has become more evident for those who give, receives, and need it.

Privacy engineering and the techno-regulatory imaginary, *Kjetil Rommetveit, University of Bergen, Niels Van Dijk, Vrije Universiteit Brussels*

This presentation addresses the topic 'socio-technical construction of the future'. It deals with ways in which legality and normativity are rendered matters for design and engineering through privacy engineering, a new professional field, through data protection by design and risk-based approaches to protection of fundamental rights. Since the adoption of the GDPR in 2018, these approaches have become mandatory in Europe and beyond, and are deeply invested in the making of a digital single market through technologies such as Artificial Intelligence, smart technologies, and Internet of Things. We describe and analyze some main ways in which time and normativity are rendered objects of anticipatory action, and strategically mobilized to inscribe legality and normativity into collective futures. Privacy engineering is analyzed as a techno-regulatory imaginary, driving regulation and rights beyond existing legal instruments traditionally aimed at compliance and regulatory oversight. We describe how data protection takes on more preventive and preemptive characteristics, and what happens as privacy engineering becomes implemented across main sites: individual technologies, organizations, infrastructure and standardization. Finally,

we reflect on what happens to rights, their meaning and function, and on the broader implications for STS studies of futures and public legitimation.

“I think it’s a shame they are calling us a ghetto, I don’t think this a ghetto.” – Enactments of underprivileged neighborhoods and how to live there, *Stine Rosenlund, Roskilde University, Mette Weinreich Hansen, Roskilde University*

With this article, we examine the ambivalent and complex experiences of living in so-called underprivileged neighborhoods. Based within STS thinking, we examine how two neighborhoods in Denmark, formally categorized as respectively underprivileged and ‘ghetto’, are multiply enacted through the entanglement of material, discursive and human actors. The article furthermore explores the entanglement of identities of subjects and places. By this framework the article opens for a discussion of what a ‘good’ neighborhood is by showing how the two areas are simultaneously enacted as good and bad places to live with many ways of being a ‘good’ and ‘bad’ resident. The data thereby challenge the implicit superiority of the middleclass neighborhood as the universal best version of a neighborhood, by showing that a ‘good’ neighborhood comes in more than one version. The article combines different sets of theoretical thinking. One based in the notion of multiplicity (Mol, 2002) and one based in the discussions of place (Massey 1995, 2004) situated in Housing studies (e.g. Casey, 2001; Easthope, 2004).

I, My Selfie, and Nature: entanglements with wilderness, *Malte Rödl, Swedish University of Agricultural Sciences, Sofia Joosse, Jutta Haider, Swedish University of Agricultural Sciences, Högskolan i Borås*

Selfies and nature photography represent and stage idealised forms of the self and nature respectively, constructing specific norms of share-worthy imagery, experiences, and ultimately ‘beauty’. Connecting these two genres, we suggest that the visual and co-located textual sign systems (e.g. hashtags, shares, likes) of nature-selfies code these entanglements and facilitate certain understandings of and engagements with 'nature' or 'wilderness'; nature-selfies thereby not only connect but are also implicated in both ends of this mediation. Building on extant the STS literature on platforms, in our contribution, we investigate the aligned data practices of taking, sharing, and interacting with selfies as influenced by the infrastructures of specific social media platforms. Exploring five cases of different nature-selfie contexts through field and desk research, we find that nature-selfies mediate (often unequal) human-nature and human-human relationships through ‘stuff’ and its absence. These relationships not only demarcate community membership, but also impact and exploit nature in material and discursive terms. We suggest further study of taking, sharing, and interacting with nature-selfies and nature-through-selfies as a (in many ways) highly impactful everyday practice of engaging with the environment, possibly

contributing to an understanding of the tensions expressed within the sustainability issues of our times.

Disfunction and distrust as organization: rethinking the organizational politics of the UK Covid-19 response with the ResilienceDirect platform and its affects, *Dan Sage, Loughborough University, Chris Zebrowski & Nina Jörden, Loughborough University*

The UK governmental response to Covid-19 response has been painted in the popular press and in academic commentaries as a lesson in organizational disfunction. Accusations of cronyism in the handing out of personal protective equipment contracts, decisions to ignore scientific evidence to lockdown earlier, and an underperforming test and trace programme, have all contributed to a sense of organizational disorder – culminating in one of the largest excess death rates in the world during the pandemic. The existing literature within emergency management suggests that these breakdowns are partly the outcome of distrust – whether between central and local government, across government agencies, between government and the general public, or between academia and government. Drawing on a qualitative study of an information technology platform – ResilienceDirect – at the heart of the UK response, we explore and then problematize this reading of events. Our study demonstrates how frustration, distrust, and even apathy, have been integral to the purposive conditions under which the UK response was organized. These negative affects have enabled executive decision-making, protected prevailing organizational logics, and silenced organizational resistance. Drawing on relational theories of affect, we examine how these human affects have been enabled by an infrastructure of technologies, including ResilienceDirect, that comprise technological affects that help these affects to circulate while obstructing or diminishing others.

Excess of digitalization: District heating and a Facebook datacenter, *Caroline Anna Salling, IT University of Copenhagen*

In the city of Odense, Denmark, the pipes of a district heating infrastructure and a hyperscale Facebook datacenter are connected. The servers within the datacenter produce a lot of excess heat that is now being re-used for the heating of homes within the city. Excess heat is a figuration of interest in datacenter-heating infrastructure arrangements. I will consider how it constructs a relation between two other forms of excess: Coal and data. Central to this paper is unfolding how the configuration of excess heat as re-used and coal as phased-out withholds another figuration of excess, rather than challenges it: data production. While the district heating infrastructure is rearranged with much effort to phase out coal as fuel, the datacenter is doubling in size to house the increasing demands for storing data. This sort of concern, following the many contributions within STS, is that of noticing the material relations between temporary urgencies. Based on ethnographic work

of following the figurations on both sides of the excess heat, this paper asks whether there are limits to forms of excess, and if so, how these limits are different.

The role of collaborative housing in creating urban futures in Vienna – relational creation of alternativenes, *Andrea Schikowitz, University of Vienna*

In Vienna, like in other cities around the globe, a new wave of self-initiated groups who realise collaborative housing (so-called Baugruppen) has recently emerged. (Lang & Stoeger, 2018; Mullins & Moore, 2018; Tummers, 2015, 2016). Most of them describe themselves as creating and experimenting with alternative ways of housing and living: They want to create different spaces, and they want to create space differently – they strive for self-management, collective ownership, different kinds of architectures and different distributions of housing, working and public space. In this context, Baugruppen can be regarded as prototyping alternative urban futures. At the same time, other actors - such as the city administration or development companies - regard Baugruppen as prototypes to learn from. I investigate how Baugruppen in Vienna create alternativeness through building a specific constellation of relations to and demarcations from other actors. Therefore, I draw mainly on assemblage urbanism (Blok, 2013; Blok & Farías, 2016), 'diverse economies' (Gibson-Graham, 1996; Gritzas & Kavoulakos, 2016) and 'grammars of commonality' (Thévenot, 2014). The empirical material consists of documents, media articles, interviews and ethnographic observation of public and internal events of Baugruppen in Vienna. For data analysis, I apply qualitative mapping approaches (Clarke, 2005; Whatmore, 2009).

New uses of the university? Third mission-policies, sociotechnical imaginaries, and the creation of the future, *Hans Schildermans, University of Vienna*

Conceptually, the three tasks of the university have often been defined as research, teaching, and service to society. Historically, the value of each of these tasks and the relation between them has been articulated differently, not only in discourses about the mission of the university, but also, and more interestingly, on the level of its practices. Nowadays, a blending of these three tasks seems to take place in a variety of new practices that gather academics, students, partners from industry, political representatives, and civil society organizations around a problem of collective concern that requires not only the development of new knowledge, but also raises the question of living together (e.g., issues related to sustainability, changing labor market conditions, migration). Examples of such new university practices include living labs, problem-based learning, and project work. A narrow understanding of these practices promoted by often strongly capitalist third mission-policies risks to focus attention solely on the first demand (the development of new knowledge), thereby neglecting the second, more political question of living together. In that sense, these third mission-policies mobilize these practices towards futures already known, while foreclosing their potential to engage with the future as something open and to be created.

Including the "messy picture" of societal challenges in economic decision-making, *Ida Schrøder, University College Copenhagen, Emilia Cederberg, Stockholm School Economics*

With the Covid-19 pandemic, rising inequality and grand environmental challenges, the question of how to take present and future societal issues into account in economic decision-making has become a standard question of decision-makers across the world. In our paper we make a leap from the grant ideas of new economic futures into the present organizational practices of including the "messy picture" of societal challenges into the accounting systems of the everyday decision-maker. The paper is based on two ANT inspired ethnographies: the first concerns how the needs of at-risk-children are included in accounting practices in a statutory public service organization. The second; how non-financial information about Environmental, Societal, and Governance (ESG) are included in accounting practices in an investment firm. We propose that the trajectory of the inclusion process is pivotal. Rather than moving societal challenges into the accounting systems, it might be more helpful for the accounting systems to move closer to the societal challenges and to think about how various kinds of accounts can evolve from the challenges themselves and provide different kinds of metrics, scales and indicators for use in economic decisions – in the broadest sense of economy.

ICTs: reflecting on a path for a less unequal future, *Maria João Simões, Délcio Faustino, Ana Filipa Martins, University of Beira Interior*

The late '70s were a period of optimism concerning the future impact of digital technologies taking into account technological deterministic approach. This presentation aims to prompt a critical reflection on the social inequalities revolving around the access and use of ICTs that have endured through decades; such a reflection implies the deconstruction of established concepts. The acess and use of ICTs has turned into a crucial issue, since digital inequality restrains our live trajectories and can lead to or exacerbate other forms of social inequality. The functions of some recently developed technologies, involving AI and algorithms, impact individuals differentely depending on their social and economic conditions. In this sense, through a documental analysis, we also analyse how these inequalities, that arise in terms of use, play an important role at various levels, such as civic and political participation, privacy protection, resistance to digital surveillance, and even when it comes to resisting algorithmic manipulation of our choices. Finally, as a matter of our collective future we set the challenging reflection based on the urgent need for the design of a different internet and on the empowerment of its users.

Placing Future Care: Digital Care Spaces as a Matter of Concern?, *Thorben Simonsen, IT University Copenhagen, Dara Ivanova, Erasmus University Rotterdam*

Science and technology studies scholars have considered the multiple and socio-technical relations between place and care, concerning themselves with how one is integral to the other in different care settings. With the spread of digitalization, however, the spaces of health/care are fundamentally changing. Examining two cases of the usage of virtual reality in healthcare provision from the Netherlands and Denmark, we seek to develop conceptual means for better understanding what 'digital care spaces' might be, how – and for whom – they might make a difference, and how they reimagine 'good care'. These empirical cases show that re-placing care leads to a fundamental reconfiguration of its nature. We therefore suggest that taking a spatial approach to contemporary digitalization is necessary, in order to develop analyses of emerging care infrastructures that may (or may not) enact healthcare as a collective matter of concern. Building on our previous ethnographic work on the nature of placed care (Ivanova 2020) and the spatial organization of psychiatric practice (Simonsen 2020), we propose that the concepts place-by-proxy and post-place care could be helpful for theorizing care practices as being reconfigured in new ways and engendering new ideas about what good care might be.

Arctic Connectivity Futures – a frugal approach, *Mette Simonsen, Aalborg University, Carina Ren, Aalborg University*

As the Arctic is heating up, so are efforts to strengthen arctic connectivity and enhance links between remote settlements and a global network of trade and sociality. With global interest in the Arctic on the rise, it becomes increasingly relevant to ensure that future plans for arctic infrastructures actually serve Arctic communities. Seeing the constitutive power of imagining the future, we are interested in fostering collaborative, post-colonial and everyday approaches to think about and co-design future Arctic connectivity. This calls for interdisciplinary research strategies that are able to connect and integrate technical and SSH approaches that are usually studied separately. In this paper, we draw on examples from Greenland to propose a collaborative approach to connectivity centered on the principle of frugality: A careful balance of local needs to make the most of existing possibilities while providing valuable and flexible solutions. A turn to frugality in infrastructural planning requires deep knowledge of the local everyday as well as industrial practices and needs to provide valuable and flexible solutions which, in turn, nurture future infrastructure research and development.

Legitimate use of health data: shifting ideas about entitlements to use and the character of data, *Lea Larsen Skovgaard, University of Copenhagen, Mette Nordahl Svendsen, University of Copenhagen*

International policies aim at creating data infrastructures which enable increasing collection and use of data from healthcare sectors. Collection and use of health data are expected to improve future healthcare through advancement in medicine and decreasing cost. The

functionality of these data infrastructures rests on availability of data from whole populations which thus becomes a matter of collective concern. Cases where data infrastructures have been abandoned after public contestation, for instance the care.data scheme in UK, show the importance of understanding how reuse of health data come to be viewed as legitimate if future use is to be sustainable. Based on observations in advisory boards advising the establishment of a national health data infrastructure and through interviews with officials, health professionals and patients from two hospital wards in Denmark we study how health data is used for multiple purposes. We discuss how ideas about entitlement, use, and the character of data are co-constituted. Finally, we argue that legitimacy is closely connected to shifting ideas about entitlements to use and the character of data.

Fictional expectations in the world of technology, entrepreneurship, and finance, *Louise Karlskov Skyggebjerg, Copenhagen Business School*

Combining insights from history of technology and history of finance, I compare the future orientation in four cases representing different themes, times, and places: - Saving for the unexpected. The founding of savings banks as an educational endeavour learning the poor to plan for an uncertain future.- Selling the future – the inventor Ellehammer, his dream of flying, and other examples of entrepreneurial make-believe-games. - Innovate! The fourth industrial revolution as innovation-speak with real-world consequences. - Staying competitive. The fictional expectations that changed savings banks from self-governing institutions to joint stock companies. The paper is inspired by the literature on futures imagined, especially Beckert's concept 'fictional expectations' understood as a fundamental force fuelling the dynamics of modern capitalist economies (Beckert 2016). It is also inspired by the so-called Maintainers' critique of 'innovation-speak' and buzzwords like disruption (Vinsel/Russell 2020). The cases are all examples of future orientation as a practice with far-reaching consequences. By combining them, I seek to explore fictional expectations as an ordinary way of promoting change and handling uncertainty, and to discuss these expectations as a kind of tightrope walking between necessity and delusion.

Economics and the mediator role of accounting in performing organizational spaces – the case of public sector reforms, *Peter Skærbæk, Copenhagen Business School, Kjell Tryggestad, Copenhagen Business School*

In organization studies there are several contributions to the 'spatial turn' but few contributions have examined how accounting calculations and economics theories and concepts such as productivity and economies of scale shape organizational spaces. This stands in contrast to accounting studies that have inquired into the performative link between accounting calculations and strategic and organizational change. In this paper, we build upon the aforementioned work, and in particular actor-network theory and Michel

Callon's (1998, 2007) concepts of (counter-) performativity and socio-technical agencement in order to develop our understanding of the link between economics, accounting calculations and organizational space. Methodologically, we are drawing upon a qualitative case study from own field research to address the following research question: How do economic theories operationalized through accounting calculations – in public sector reforms - shape organizational spaces – and in turn – how do organizational spaces shape the economic calculations and the economic theories that are integral to them? The paper contributes in particular to public sector accounting research by showing how economics use budget inquiries to problematize organizational spaces and formulate innovative organizational solutions, and in turn, how those economics derived solutions, due their recurrent spatial ignorance, generates new and more devastating organizational problems. Through a case within the Danish police it is shown how it went through several budget inquiries and ended up in a mergers strategy by reducing the number of police districts from 54 to 12 and finally how that generated huge (fatal) consequences for its operations and costs.

Visibility? Do It Yourself! Sociotechnical Movements in times of Climate Catastrophe, *Bartosz Ślosarski, University of Warsaw*

The aim of the paper is the exploration of technologically mediated ways of visualizing industrial pollution and climate change by social movements (Latour 1986; Mirzoeff 2011; Tarrow 2015). Especially environmental movements are trying to make the problems of climate change and industrial pollution visible by shaping and spreading the knowledge (Della Porta, Pavan 2017) and new forms of life (Papadopoulos 2018), mostly through scientific-like visualizations based on various types of records to stimulate public awareness. Some of them, such as the Polish anti-smog movement, create their own measurement tools and their own data infrastructure based on networked sensors and smartphone applications. There is a large number of STS studies that explore interconnections between social movements and technological change or controversies (Feenberg 2020; Hess 2016; Rojas 2007; Wolfson 2014). However, the emphasis on strategic action (Jaspers 2006) and collective practices of knowledge production (Della Porta, Pavan 2017) is still needed. In the paper, I will explore the ways of mobilizing nonhuman actors, including new tools, software, grassroots data infrastructure, showing how contemporary climate and environmental movements are becoming socio-technological weaves within their strategic action of visualizing climate and pollution controversies.

Conflicting epistemic goods, informal care practices, and multiple research objects in a clinical trial on mindfulness meditation, *Mareike Smolka, University Maastricht*

Mindfulness meditation has become a popular lifestyle intervention in randomised controlled clinical trials (RCT). Studying meditation in an RCT poses the challenge to

standardise a complex intervention that is difficult to define and highly context-dependent. In meeting this challenge, clinical researchers juggle a variety of partly incoherent epistemic goods: internal validity versus social relevance, assessing efficacy versus attending to qualitative effects, and objectivity versus trained judgment. Drawing on praxiographic research on an RCT that examines the effects of meditation compared to a foreign language training on healthy ageing, this presentation analyses how the research team enacted conflicting epistemic goods together. Reinterpreting the study protocol, caring informally while playing by formal rules, and adjusting the procedure of a study task were different strategies to respond flexibly to unexpected events in the research process. Deploying these strategies constituted multiple ontologies of mindfulness meditation. Meditation was studied as a cognitive training, an affective training, and a contemplative practice. Tracing how different ways of doing good research shape the study of meditation contributes to STS scholarship regarding the reflexive treatment of scientific inquiries as socio-cultural practices, the role of care in making RCTS 'do-able,' and critical approaches to biological reductionism in biomedical research.

"Here comes Bio-me". Recruiting children to biobanks, *Karoliina Snell, University of Helsinki, Heta Tarkkala, University of Helsinki*

Children are often seen as "the future". This is the case in Finnish biobanks too, as they have started to recruit children. There has been little public discussion in Finland about the ethical implications of collecting children's samples for prospective research uses. The national supervising authority, however, has emphasized the centrality of providing children with age-appropriate information prior to recruitment. We analyzed one such campaign. We argue that by simplifying the complex socio-technical arrangements of biobanking by introducing a new metaphor-like concept, "Bio-me", the campaign presents a misleading and reductionist picture of data-driven biomedicine and biobank participation. Firstly, the Bio-me character seems to bear similarities to the 17th-century explanations of embryological development. Secondly, the campaign focuses on biological material while crucial connections to different sorts of data are ignored. Thirdly, we point to the absence of verbal references to genes and DNA, despite the prevailing visualization comprises the double helix. We argue that the campaign has potential to contribute to public misunderstanding of science by introducing a new term that has little connection to actual biology or scientific practices it tries to promote. Nor does it acknowledge any ethical concerns or the unknown future consequences of biobank participation.

Studying Futures Studies, *Matthew Spaniol, Aarhus University, Nicholas J. Rowland, Penn State University*

Illustrated by examples with empirical support, the authors provide three productive avenues for future research at the intersection of futures and foresight science (FFS) and

science and technology studies (STS). On balance, FFS is like any other scientific enterprise that has come under empirical scrutiny by STS. There is a microcosm where tools are deployed, in this case, applied methods that produce futures. There is a related, overlapping microcosm of scholarly production, in this case, the FFS body of literature. Outcomes from both microcosms also make their way into sites far beyond those small worlds of their original production. For example, visions of the future enter into international political debates as well as public discussion in schools and at home in addition to various on-line venues (e.g., podcasts, blogs). Sensitizing conceptual apparati from STS inform empirical study of both microcosms, including their predictable overlap, and the uptake of futures into public discussion as well as the appropriation of futures for purposes not intended by their originators producing unintended consequences. In each of these worlds -- worlds of application, scholarly production, and public participation – STS scholars can meaningfully study significant objects and integral practices that produce and enact futures.

Concerning talk in the agencing of collaboration: methodological insights from Conversation Analysis, *Ingrid Stigzelius, Stockholm School of Economics, Lina Nyroos, Södertörn University*

Cross-sector partnerships and collaborations have become a magic bullet for addressing various societal matters of concern. Partnerships have however turned into an empty signifier, and it is often unclear how the collaboration itself is constructed, negotiated, and maintained in the partners' everyday work. In order to capture how these processes are accomplished, this paper focuses on how partnerships are performed through talk (Heritage and Clayman 2010) as situated socio-material practices (Kjellberg and Helgesson, 2007). Drawing on insights from ethnomethodological work and Conversation Analysis (CA) (Heritage 1984) we demonstrate how collaboration is being done in situ, paying specific attention to how parties identify and formulate concerns. The presented study uses empirical data (longitudinal participant observations and audio-recordings) collected through steering group meetings in a partnership working for social inclusion in the labour market. Through close analysis of how partners negotiate matters of concern and means to address them, we detect important links in how a partnership itself is being agenced through talk that enact mutual concerns. In doing so, we develop a deeper understanding of the interaction between concerning and agencing (Mallard, 2016; Stigzelius et al., 2018), while offering methodological insights of how these processes can be studied in mundane meetings.

Finding the cure for our children: Exploring parent-led transformations of biomedical knowledge production, distribution, and consumption *Dixi Louise Strand, Roskilde University*

This paper explores active engagement of publics in the development of science and technology, taking the parent-led construction of a rare disease biomedical collective as its case. The syndrome ANDP was first described in 2014 as a genetic mutation linked to a complex range of clinical characteristics found in children. Since then, about 300 children have been diagnosed worldwide through genetic testing. Many of their parents are connected in an online community that share experiences and struggles with the disease while also working towards increased awareness, advocacy and research funding. Several parents have also developed scientific expertise and have taken part in constructing new knowledge related to the syndrome. One parent embarked on systematically collecting patient-based evidence leading to the development new biomarker in 2017, early stage teeth development. Another parent developed an AI tool to search medical literature for possible new treatment ideas or drugs that could be repurposed leading to a clinical trial initiated in 2020 to test the drug ketamine on 12 children recruited through the community. Based on analysis of online material, the paper explores the building of legitimate authority on the illness of one's child and the making of a biomedical collective cutting across science-public divides.

Future figurations through carbon data - politics of oil and gas in Stavanger, Norway, *Anne-Sofie Laustrup Sørensen, IT University of Copenhagen*

Carbon data is used to assess the future in novel ways as consensus on the severity of the climate crisis intensifies. This paper explores the role of carbon data in local understandings of Norwegian oil and gas production and negotiations over low-carbon futures. The paper draws on ethnographic fieldwork in the Norwegian oil-capital Stavanger among young climate activists and people working in the local oil and gas sector. Stavanger makes for an especially interesting case: inhabitants are acutely aware of the destructive consequences of fossil fuels for the global climate, while oil and gas make up the foundation of the local labor market as well as the finances of the national welfare state. The paper lays out how youth and industry people respectively understand, interpret and use carbon data to ascribe value to specific future scenarios. By engaging with literature from STS and anthropology, the paper argues that a calculative data logic of governance and industry make for a certain kind of politics, where the future is prefigured through predictive models and where youth's attempts at alternative politics that figurate futures through everyday practices and emotional responses are dismissed as inconsistent and naïve.

Tackling the obstacles to imagining mediated futures: Observations from experimental workshops with young people, *Minna Saariketo, Aalto University, Sija Ridell & Auli Harju, Tampere University*

This paper presents findings from our recent research project that experimented with methods to encourage young people to think reflectively together the role media

technologies might have in the future. In the project's 'imagining workshops' we tackled the challenge encountered in previous research, namely the near impossibility of taking critical distance from and envisioning alternatives to the ways things 'normally' are with our relations to media and technologies (see, e.g., Saariketo 2020; Markham 2020). Regarding an age group that has grown surrounded by the ubiquity and taken-for-grantedness of digital technologies, this challenge is particularly pronounced. We will discuss the findings from our experimental workshops by addressing what the participants projected as matters of concern (cf. Latour 2004) of the mediated everyday life ten years on, and how the workshop method with its playful elements was able to deal with the obstacles that emerged to imagining alternative futures with media and technologies. We also discuss the potential, and limitations, of the experimental workshop method to engage participants not only in reflecting together issues of collective concern but also in imagining proactively matters that should be both cared about and cared for (cf. Puig de la Bellacasa 2017).

Engaging futures through hormones, *Maria Temmes, Asian University for Women, Venla Oikkonen, Tampere University*

In recent years, hormones have emerged as central to envisioning futures. While increasing concern has emerged around environmental hormones and chemicals able to disrupt the body's hormonal balance, hormones also carry biomedical promise, being central to novel treatments for cancers, chronic conditions, and age-related changes in the body. Crucially, there are foundational tensions in these visions, including how boundaries are enacted between hormones and other embodied entities, and whether hormone is seen as a molecule synthesized by a gland or as a system of messaging between different parts of the body. We explore these tensions through biomedical and patient groups' materials on two gendered chronic diseases, migraine and endometriosis. In what situations is a particular hormone such as estrogen emphasised, and when (and by whom) are hormones understood as an intricate system? What are the implications of these different framings for strategies of managing and living with hormone-associated chronic pain? As systems biology is increasingly pushing forward a more holistic approach to bodies, tracing these moments of ontological blurriness can help to both explain the push towards systems thinking in biological research as well as the challenges it poses to research and treatment development.

"It's an industrial town": public things in shaping decarbonisation concerns in Port Talbot, South Wales, *Gareth Thomas, Catherine Cherry, Chris Groves, Erin Roberts, Fiona Shirani, Nick Pidgeon & Karen Henwood, Cardiff University*

Four decades on from the onset of deindustrialisation in the UK and other late-capitalist societies, industrial places are re-emerging as objects of concern in discourse surrounding low carbon energy transitions. In response to imperatives to decarbonise, and the economic

and political gaps which have emerged between cosmopolitan centres and old industrial regions, clean growth imaginaries are increasingly being articulated as a means of addressing the problems of such 'left behind' communities. Presenting data produced via biographical interviews and deliberative workshops in Port Talbot, South Wales, we explore how experiences of life in one of the UK's most significant manufacturing towns shapes how common concerns for decarbonisation and industrial futures take shape at a local level. In so doing, we illustrate how situated feelings of dependence, neglect, comfort and tranquility underpin a variety of 'public things' (Honig, 2017); collectively provisioned social and material infrastructures upon which local people rely, and from which collective hopes and fears for the future derive meaning. By paying attention to affective relationships to public things, we argue scenarios for localised decarbonisation will stand a better chance of meeting the needs and desires of left behind communities.

Broken techno-ecological systems and art as reparative gestures, *Line Marie Thorsen, Aarhus University*

This paper explores the way groups of artists in Japan have been turning towards practices of repair, as a means of grappling with the urgent and long-term consequences of the earthquake, tsunami, and nuclear disaster of March 11, 2011. In particular, the extensive radioactive contamination from the meltdown of the Fukushima Daiichi nuclear power plant became a catalyst for reflections on 'modern' life and its perils. Responding to aspects of these events, some artists started helping in the earthquake and tsunami struck areas, while others actively began reimagining ways of living that are not dependent on nor prone to complex breakdowns and unsustainable forms of life in the future. Specifically, this has taken the form of two entwined modes of short- and long-term art engagements: first, artist turning their work into acute disaster aid, and second, artists transforming themselves into 'natural' and organic farmers in slow reparative gestures. Based on ongoing ethnographic field research since 2012, I will engage these phenomena as they unfolded immediately in the disaster struck area of Tōhoku and later, as farming in the countryside of the Niigata prefecture. Both groups of artists, I suggest, have transformed their art in ways that aim at repairing both broken items, as well as broken techno-ecological systems – energy- as well as ecosystems.

Yummy Anthropocene Feast : A Multi-Species Ethnography on Istanbul's Fish, *Beyza Dilem Topdal, Ozyegin University*

This paper examines the relationship between the Blue Fish and anthropocentric effects around the Bosphorus - Istanbul from the crip technoscience (Eilers, Grüber ve Rehmann-Sutter, 2014 ; Hickman, 2019). and food politics (Laudan, 2001) point of views. As part of the author's ongoing Ph.D. thesis "Critters of Crippled Seas" ; this paper is developed through interviews with fishermen around Bosphorus and ethnorgraphic field data. By

applying the methodology of grounded theory (Corbin & Strauss, 2008), this qualitative analysis is looking into how the sea food of Istanbul is changing in the Anthropocene by wrong fishing politics and environmental destructions. A multi-species ethnographic point of view (Kirksey & Helmreich, 2010 ; Tsing, 2017) is appreciated in this study in order to understand what non-humans of Istanbul marine life is telling us. Most of the fish species are changing their behaviour by choosing not to cross from Bosphorus, some are in danger of extinction. These fish are crucial actors in the sea food cuisine of Istanbul with indigenous values in Ottoman and Turkey's food history. They are natureculture values for Istanbuliotes that used to excite them, making them wait for the migration route. These memories are fading as the possibility of eating Bluefish is becoming a nostalgia. How can this study help redefine a new Istanbul Sea Food Cuisine in The Anthropocene? Moreover, this paper speculates over the urge to find alternative sea food forms and techniques. What would the future of sea food look like in Istanbul and how can we still appreciate it? This research is also supported by the author's artistic production and will be presented with art pieces and field photographs.

Regional acute care services as collective concern: centering the periphery, *Nienke van Pijkeren, Erasmus University Rotterdam, Hester van de Bovenkamp, Iris Wallenburg, Roland Bal & Siri Wiig, University of Stavanger*

The optimalization of acute healthcare is a central policy concern in many countries in the global North. The dominant strategy is the centralization of health and social services as higher volumes of care would be more efficient and enhance quality of service provision (Postma & Zuiderent-Jerak, 2017). As a result, traditional acute care facilities (e.g. emergency rooms) are disappearing from peripheral areas, possibly leading to a further marginalization of those areas. In this paper we show how peripheries attempt to develop into new centers of creativity by focusing on how care facilities are being replaced and new technologies are brought in to provide 'care at a distance' or 'in-between acute services'. Drawing on empirical data from healthcare regions in Norway and the Netherlands we explore how local mobile teams and nursing homes are reconfigured to take care of a wide range of patients, transgressing traditional boundaries of care provision and quality standards (Schuurmans, van Pijkeren, Bal, & Wallenburg, 2020; Timmermans & Epstein, 2010). Rather than seeing peripheral places as 'underdeveloped' and dependent of the center, we argue that peripheries are margins for innovation and creativity (Nel & Pelc, 2020) and support resilience for both centers and peripheries in the acute care landscape.

Sex Hormone Ecologies as Speculative Ecologies and Ecologies of Speculations, *Lenka Veselá, University of Technology Brno*

I put forward the notion of "sex hormone ecologies" as a mode of relating to the world through imaginaries of molecules with the ability to affect sex, sexuality and reproduction

(among many other things) of living beings. I take the uncertainty about how much endocrine disrupting chemicals (EDCs) interfering with biosynthesis, metabolism and functions of physiologically produced sex hormones reach and affect humans and wildlife as a starting point for my inquiry. I ask: how are these gaps in knowledge filled by speculative narratives and to what effects? Most scientists warn that despite the lack of direct, irrefutable evidence, EDCs are truly harmful, with their effects on what is considered "healthy" sexual and reproductive development being of particular concern. Meanwhile, industrial manufacturers and distributors mobilize the uncertainty to refuse responsibility for possible "side effects" of their products. In contrast, some artists and activists speculate narratives not grounded in normative, static understandings of bodies and sexualities and imagine hormonal landscapes as sites of indeterminacy and queer becoming (rather than sites of pollution) and conceive of them through the notion of care (rather than of "concern"). What futures with these chemicals do these different accounts envision for us?

Automation and the future of work – Lessons from the sociology of expectations, *Lilla Vicsek, Corvinus University of Budapest*

The goal of the lecture is to demonstrate how the sociology of expectations (SE) can make important contributions in the debate on the future of work and automation by critically evaluating the dominant expert positions on the issue. SE is an area within sociology and STS that deals with the constitutive role of future visions. After providing a summary of the main ideas of SE, an approach based on the latter is applied to interpret and critique the dominant ideal-type expert positions in the future of work debate to illustrate the value of this perspective. It is argued that these expectations can have significant consequences. They contribute to the closing off of alternative pathways to the future by making some conversations possible, while hindering others. In order to advance understanding, more sophisticated theorizing is needed which takes uncertainty and the mutual shaping of technology and society into account – including the role expectations play. Rather than just focusing on mitigating the effects of a supposed vision of the future as prominent projections on the future of work do, the problem should be reframed with more agency given to humans and to the present and a sensitivity to power and inequality issues. Besides argumentation on how the debate could be reframed theoretically, scenario building and backcasting are suggested as two tools which could possibly help move forward thinking on the topic. The project the lecture is based on was supported by the Hungarian National Research, Development, and Innovation Office.

The futures of zoning relief, *Nataliya Volkova, Oxford Russian Fund*

This paper discusses the procedure of zoning relief as a method of testing that brings private citizens' visions of their future into urban law and land use policies. In their work on the 'sociology of testing', Marres and Stark see testing in scientific or social research as a

prototype or beta version for the tested setting. By contrast, the test of policy regulations provides the undermining prototype for the tested setting. The test of policy regulations suggests the prototype for the policy norms which works as a technical representation of the zones and as an alternative description for the use of territory. This argument is based on my analysis of land use policies and zoning reliefs in Russian regional cities, focusing particularly on official procedures and cases of public negotiations for policy changes. Zoning relief as a common term describes a number of mechanisms that allow local citizens and businesses to make land use regulations responsive to their interests. Following citizens' relief applications, zoning reliefs introduce piecemeal adjustments and exceptions, which put to the test land use regulations and restrictions. The land use policies shaped by zoning reliefs represent how urban futures are shaped and limited by citizens and policies.

Future Loops – Careful engagements with European circular economy policies and indicators, *Thomas Völker, University of Bergen, Zora Kovacic, Roger Strand, University of Bergen*

In recent years the concept of a circular economy (CE) gained prominence in EU policymaking and beyond. The CE promotes a future in which linear 'make-use-dispose' cultures are replaced by more circular models. In EU policy narratives of a CE ideas about waste management, recycling, reuse, resource efficiency, sharing economies, maintenance and repair cultures are all woven together in multiple ways to 'close the loop'. The theoretical basis of the CE, however, has been heavily criticised by ecological economics, because ideas of circularity violate the laws of thermodynamics. In this talk we draw on material gathered in the H2020-funded project "Moving Towards Adaptive Governance in Complexity" (MAGIC) and explore CE indicator development as a site of future-making. This means asking for the techno-epistemic communities engaged in the development of the indicators, the particular spatio-temporalities that are enacted through the selection of a certain set of indicators and the broader sociotechnical imaginaries guiding the development of these policies. We contrast the authoritative use of numbers with alternative ways of quantifying circularity, as a means of challenging future circular visions while maintaining trust and mobilising care in our engagements with policy makers. This also means reflecting on our own role in this process and asking how careful engagements with EU policymakers in spaces for openly discussing "uncomfortable knowledge" and for collectively imagining desirable futures might look like.

Turning medical technologies into matters of collective concern, *Sarah Wadmann, VIVE - The Danish Center for Social Science Research, Mette B. Steffensen, Danish Ministry of Industry, Christina L. Matzen, AbbVie Denmark*

Public and patient involvement (PPI) is promoted as a means to ensure the legitimacy of difficult decisions related to the economic prioritization of new medical technologies.

Building on Habermasian ideals of deliberative democracy, current policy solutions aim to engage patients as experts of lived disease experience and promote consensus among healthcare managers, clinicians, patients and manufacturers on the value of new pharmaceuticals. Building on a case study of the Danish Medicines Council (DMC), we explore how patients' engagement in the evaluation of specialized therapies corresponds to the ideals of PPI. The analysis rests on document analysis and interviews with four employees of the DMC and 14 patient representatives. We identify a schism between regulatory conceptualizations of patients 'experiential expertise' and medical 'evidence' and demonstrate how the ideal of consensus sometimes prevent rather than facilitate deliberation. Drawing on and contributing to STS scholarship on the epistemic identity of patient organizations, we show how patients' responses to these challenges vary considerably: while some dismiss their acclaimed role as patient 'experts', others seek to adapt their 'experiential expertise' to scientific ideals or invest in 'evidence-based activism'. We discuss implications for the ability of patients to turn medical technologies into matters of collective concern.

Playing drone-warfare? An empirical study into the making of weaponized drones within virtual communities of practice, *Kevin Weller, TU Munich*

While a variety of scholars have already commented on the history and ethical implications of using weaponized drones in warfare, the starting point for their observations usually lays within the military-industrial apparatus and the drones they produce. However, given the increasing popularity and availability of drone-technology throughout societies, a trend toward bottom-up innovation of 'making drones' may be observed that extends all the way into the realm of drone-warfare. Often in a playful (for example, Airsoft / NERF) setting, DIY-inventors create new narratives of what the future of drone-warfare might look like. In this quest, they are not alone: By posting their progress, their ideas, and their failures on social media (here: YouTube) they allow for virtual communities of practice to form around their creations, providing a starting point for community driven iterations of drone-designs as well as the negotiation of new narratives of drone-warfare. While this trend brings with it a variety of new ethical concerns (like the potential for a democratization of warfare), in this paper, I explicitly focus on the narrative aspects of this form of drone-innovation in practice: How is the future of drone-warfare being envisioned within these communities and how does their vision connect to new developments of weaponized drones by professional actors / how does it question their narratives?

Staying with the Jatropha Trouble: The Modest Witness Meets the Troubled Witness, *Marie Widengård, University of Gothenburg*

The speed of jatropha's rise and fall as a biofuel crop in the 2000's is remarkable, yet many hopes and troubles linger. In this paper, the 'Modest witness' tells the story of why jatropha

failed to deliver pro-poor biofuels and how it can be resurged, by calling upon the figures of Jatropha 1.0, Jatropha 2.0, Jatropha 2.1, and Jatropha 2.$. As an exercise of figuration, the paper invites the 'Troubled witness' to critique these 'modest' reconfigurations, and to attest to jatropha's multiple temporalities and toxic interspecies relationships drawn into these figures. Drawing on Haraway, the Troubled witness stays with the troubles, and attests to how global imaginaries emerge rapidly and set local processes in motion and fail, leaving peoples and natures displaced, in-between. This witness denies that Jatropha 1.0 is merely a reference point that can be used to capitalise upon jatropha's troubled past, in denial of the deforestation, displacement, and toxicity left behind. In the meantime, jatropha reforms into more critical figures by thinking with different sensibilities at multiple scales, from the global all the way down to the genes.

Boundary Objects, Things-in-common, and Future Hybridity, *Tintin, Wulia, University of Gothenburg*

Scholarship on boundary objects has grown significantly since Susan Leigh Star set its conceptual foundation in motion, in 1988. This paper will contribute through a survey of Star's boundary objects' connection with other concepts of objects and things, specifically as discussed in Judy Attfield's Wild Things, Jane Bennett's Vibrant Matter, and Sara Ahmed's Happy Objects. Through several case studies taken from the author's empirical artistic research – including a public art intervention and mobile ethnography of cardboard waste in Hong Kong, Trade/Trace/Transit (2014-16), and the workshopperformance Make Your Own Passport (2014) – the paper will discuss several arguments on: (1) how objects' identity – like that of humans' and cyborgs', to follow both Stuart Hall and Donna Haraway – keeps mutating, (2) how these mutations take place as objects travel through associations within different assemblages, and (3) how these mutations take place spatially and temporally. The author will also introduce a phase of this identity mutation, namely where/when a boundary object – which allows connection even without agreement – becomes a 'thing-in-common', where/when the object mutates to become something in commonality between participants. It will then discuss these things-in-common's potentials in cultivating cultural hybridity through being humans' companions into the future.

The Role of Scientific Expertise in the Drive for 'Smart Urbanism', *Nicolas Zehner, University of Edinburgh*

Meta processes such digitisation lead to a redefinition of the relationship between science and politics. The increasing demand for both policy-relevant work and scientific supply of futureoriented knowledge demonstrates that the politics and science of the future are closely intertwined. One domain that appears particularly influenced by the increasing entanglement of science and politics is urban-regional innovation. One example of this is the Edinburgh and South-East Scotland City Region Deal. The latter represents a £1.3bn

investment by the Scottish and UK governments and local partners over the next fifteen years, which is designed to accelerate inclusive and data-driven growth and establish the city region as the "Data Capital of Europe". Conceptually rooted at the intersection of an emergent literature in the sociology of imagination and urban assemblage thinking, this paper argues that urban future-making is characterised by an unequal distribution of projective agency and driven by an entrepreneurial class at the intersection of science and politics. This argument is supported by two empirical findings. First, higher education officials act as translation agents, thereby creating, dispersing and stabilising specific urban-regional sociotechnical imaginaries. Second, there exists a discrepancy between vision and reality with local communities having no access to future-imagining practices.

Tinkering with technology: New practices and redistributed roles within the smart home,
Line Kryger Aagaard, Aalborg University

This paper explores the role of smart home technology (SHT) in everyday practices and household members' experiences. SHT is developing rapidly and will most likely form the fabric of our future homes. Home automation causes alterations in everyday life, social practices and domestic roles. The SHT field is often described as male dominated, but how this exactly plays out in practice is less researched. This paper demonstrates how the implementation of SHT results in new practices and a redistribution of (gender) roles. Based on home tours and user interviews, the study documents how different types of SHT require work and technological skill for optimal performance and interoperability, which involves programming and a mapping of the household's routines. Such activities make up a new domestic practice – proposed in the paper as SHT tinkering. This involves monitoring and control and requires tech-savvy competences. In the study, SHT tinkering would most often (or solely) be performed by the man of the household whom simultaneously took the biggest interest in SHT and held the basic competences for its implementation. The practice of SHT tinkering indicates a redistribution of roles within everyday practices, with the risk of reinforcing power imbalances and gender roles.