



PROGRAMME

JUNE 2

time	event	place
09:00 – 10:15	Check-in/ Coffee, tea, and croissants	Nygaard lobby
10:15 – 11:45	Welcome and Keynote Anders Blok Jensen: <i>'The Sustainable State' of STS</i>	Peter Bøgh Auditorium
12:00 – 13:00	Lunch	Nygaard lobby
13:00 - 14:00	TRACK 1: Art, Science, and Technology Studies (I) Chair: Hannah Star Rogers	Nygaard 184
SESSION 1	<p>Art, Science and the Politics of Knowledge Hannah Star Rogers</p> <p>The STS-Curator: New configurations of the 'curatorial analytic' in <i>The World is in You</i> Kristin D. Hussey</p> <p>Resonant and entangled – sound-based approaches to intersections between art, science and technology Eduardo Abrantes</p>	
	TRACK 2: What Worlds do Workshops World? Chair: Peter Danholt	Nygaard 192
	<p>Living the Workshop Life: The users, the games, and the unintended consequences Torben Elgaard Jensen & Ann-Sofie Hjelt Thorsen</p> <p>Giving voice to old garments through e-mending workshops Seçil Uğur Yavuz</p> <p>Vapourshops? Peter Danholt</p>	
	TRACK 3: Design, Interfaces, and Bodies Chair: Lone Koefoed	Nygaard 091

	<p>Staging Difference: Scripts, Experiments, and Artificial Sociality in Japanese Robotics Laboratories Frederik M. Vejlin</p> <p>How to get divorced online: Rethinking public sector user interfaces with rites of passage theory Anine Hansen & Lone Koefoed Hansen</p> <p>Reparatory Design, sustainable ecologies of embodied practices, vulnerable knowledge, and resilient methodologies. Luis Guerra</p>	
	<p>TRACK 4: Science: Attitudes, Doubt, and Bias</p> <p>Chair: Pablo Velasco</p> <p>Ungendered writing: Language patterns are unlikely to account for gender differences in funding rates in the natural and technical sciences</p> <p>Serge P.J.M. Horbach, Maxime Sainte-Marie & Jesper W. Schneider</p> <p>Loving life? Loving science? Life satisfaction predicts public attitudes towards science</p> <p>Simon Fuglsang</p> <p>The Benefit of the Doubt: Rethinking critique in/of scientific knowledge</p> <p>Marie Larsen Ryberg</p>	Wiener 030
14:30 – 15:30	General Assembly DASTS	Peter Bøgh Auditorium
15:30 – 16:00	AnTech book reception: The Palgrave Handbook of the Anthropology of Technology	Nygaard lobby
16:00 – 17:30	TRACK 5: Art, Science, and Technology Studies (II)	Nygaard 184
SESSION 2	<p>Chair: Adam Bencard</p> <p><i>The World is in You</i> – blending art, science and history to explore how environments shape bodies Adam Bencard</p> <p>Failed communication as a creative resource in art-science-STS collaborations Louise Whiteley</p> <p>Udredning-Udtrykt / Expressing 'undergoing diagnosis' Christopher Gad</p>	
	<p>TRACK 6: Productive Breakages: Repair and Renewal of Algorithmic Systems</p> <p>Chair: Minna Ruckenstein & Dorthe Brogaard Kristensen</p> <p>Uncomfortable knowledge and clumsy solutions: Productive breakdowns in everyday cybersecurity practices</p>	Nygaard 192

	<p>Laura Kocksch & Torben Elgaard Jensen</p> <p>Potentials and precarities with uncertified and certified eDevices in epilepsy care Frederike Fahse & Henriette Langstrup</p> <p>Algorithmic Enactments: exploring the making of an early warning algorithm Maja Hojer Bruun & Eva Ladekjær Larsen</p> <p>Algorithmic futures and the unsettled sense of care Minna Ruckenstein & Sonja Trifuljesko</p>	
	<p>TRACK 7: Commercialization and Ethicalization in policy-making</p> <p>Chair: Kasper Schiølin</p> <p>The Co-production of European AI Ethics: Insights from a Project in the Making Nina Frahm & Kasper Schiølin</p> <p>Into the valley of death: nanotechnology and isomorphic difference in US policy-making. Aixa Y. Alemán-Díaz & Alan Irwin</p> <p>An Always Ethical Science: Public Policy and the Rise of Scientific Justice Hilton Simmet</p>	Nygaard 091
	<p>TRACK 8: Data Work in the Public Sector</p> <p>Chair: Claus Bossen</p> <p>The data work of medical secretaries in Danish hospitals Casper Knudsen</p> <p>Field Data in Focus Adela Sobotkova</p> <p>Making Reliable Data: Enacting and Negotiating Data Quality through Data Work Asbjørn M. Pedersen</p> <p>Digital transformation and the HealthcarePlatform: Agency and socio-technical boundaries between professions Claus Bossen & Naja H. Møller</p>	Wiener 030
19:00	Conference Dinner	AROS museum

JUNE 3

time	event	place
08:30 – 09:00	Coffee, tea, and croissants	Nygaard lobby
09:00 – 10:30	TRACK 9: Caring and Commoning in/through STS interventions	Nygaard 184
SESSION 3	Chair: Giacomo Poderi & Maurizio Teli	

	<p>Maintain-ability. On Life Alongside Computer Software Mace Ojala</p> <p>Creative reuse in commons Sanna Marttila & Joanna Saad-Sulonen</p> <p>“My best competence is love”- Exploring Relational Perspectives in Sustainable Agri-Food Education: An Ethnographic Study of an International Master Course in Agroecology Laura Brandt Sørensen, Stine Rosenlund Hansen & Niels Heine Kristensen</p> <p>Examining the role of care and reciprocity in human-soil relations as enactment of regenerative farming Ane Kirstine Aarea, Laura Sørensen & Stine Rosenlund Hansen</p> <p>Controversy mapping and the care for climate commons - Re-assembling the Danish climate movement by counter-mapping digital network maps Adam Veng & Irina Papazu</p>	
	<p>TRACK 10: Ruptures through re-politicizing technified ‘facts’ on sustainability</p> <p>Chair: Julia Kirch Kirkegaard</p> <p>Instruments for sounding the alarm – how activists use technification and dramatization to critique wind turbine projects. Daniel Nordstrand Frantzen</p> <p>The Competition of Heat Pumps Caroline Anna Salling</p> <p>Infrastructuring the trouble: Sustainability reports, facts & expertise Michael Hockenhull</p> <p>Facts and Politics of Air Pollution in Copenhagen Steffen Dalsgaard & Rasmus Tyge Haarløv</p>	<p>Nygaard 192</p>
	<p>TRACK 11: Climate Imaginaries</p> <p>Chair: Pablo Velasco</p> <p>Suspending Democratic (Dis)Belief: Technodemocratic Imaginaries of Solar Power in Morocco and Tanzania Monamie Bhadra Haines, Sharlissa Moore & Turner Adornetto</p> <p>“The science is clear, our climate is changing”: Futuristic representations of climate risks Antoinette Fage-Butler</p> <p>‘Every man can choose his own climate’: The Mechanics of Geoen지니어ing in Jules Verne and Didier de Chousy Sebastian Egholm Lund</p> <p>A state of emergency or business as usual? A three-</p>	<p>Nygaard 091</p>

	<p>dimensional perspective on the role perceptions of climate scientists, climate journalists and citizens in climate science communication Peter Busch Nicolaisen</p>	
	<p>TRACK 12: Values in Care and Treatment</p> <p>Chair: Astrid Meyer</p> <p>Cooling the patient out: Distributed decision-making and heated debates over access to advanced therapies Sarah Wadmann, Laura Emdal Navne & Amalie Martinus Hauge</p> <p>Journeys into stem cell treatment - Decision-making journeys into the promised lands of hope, trust, and unknowns Anders Grundtvig</p> <p>Privacy and Surveillance in Care Work Stinne Aaløkke Ballegaard, Astrid Meyer & Anders Albrechtslund</p>	Wiener 030
<p>11:00 – 12:30</p> <p>SESSION 4</p>	<p>TRACK 13: Approaching Platform Work</p> <p>Chair: Kalle Kusk</p> <p>The human in and outside the app: Ethnographic studies of algorithmic management in digital platform work Katrine Duus Terkelsen</p> <p>“This order is shit”: Negotiating with algorithmic management on a last-mile delivery platform Kalle Kusk</p> <p>With or without algorithms: Managing self-employed in the platform economy Christian Haldrup, Anna Ilsøe & Trine P. Larsen</p> <p>Housecleaning platforms in Denmark: How does the past fit in the imagined future? Konstantinos Floros</p>	Nygaard 184
	<p>TRACK 14: Designing the Socio-Technical Design Research & STS</p> <p>Chair: Stefanie Eggers & Christian Lepenik</p> <p>Prototyping living spaces: How design as a sociomaterial practice can create sustainable worlds Ruth Neubauer, Ksenija Kuzmina & Elke Bachlmair</p> <p>Prototyping the future, prototyping citizens – the Danish trial of ‘technology comprehension’ in public school Simy Kaur Gahoonia & Christopher Gad</p> <p>Noticing Ruptures –The Role of Tacit Knowledge in Designing Intuitive Interfaces Christian Lepenik & Stefanie Egger</p>	Nygaard 192

	<p>Disruption and design through ‘aesthetic co-production’ in Engineering Entrepreneurship Education Annika Skoglund, Daniel Aditya Tjhin & Arwin Zendeherokh</p> <p>TRACK 15: Responsive and Responsible Technologies</p> <p>Chair: Finn Olesen</p> <p>War and PowerPoint presentations: interventions in the military staff organisation Søren Sjøgren</p> <p>Back to basics: disassembling ‘the responsibility multiple’ in the governance of research Clare Shelley-Egan & Michiel Van Oudheusden</p> <p>Fetishizing Ruptures – sociomaterial and political economic perspectives Jan Løhmann Stephensen</p>	Nygaard 091
	<p>TRACK 16: Civic and Industrial Epistemologies</p> <p>Chair: Shuang L. Frost</p> <p>Remaking Entrepreneurial Imaginary of Black Female Tech Founders Shuang L. Frost, Yuson Jung, Marlow Rencher & Dawn Batts, TechTown Detroit</p> <p>Exploring Europeans' relationship with science and technology: An empirical typology of scientific engagement Lucilla Losi</p> <p>Temporal tensions of dynamic capabilities: The integration of external resources and the implications of assetization for non-profit hybrid organizations Jane Bjørn Vedel & Kean Birch</p> <p>Referential alignment: Situating knowledges in Innovation Science Joakim Juhl</p>	Wiener 030
12:30 – 13:30	Lunch	Nygaard lobby
13:30 – 15:00	Keynote1 Sheila Jasanoff: <i>Science and the New Constitutionalism</i>	Peter Bøgh Auditorium

INFORMATION & ABSTRACTS

Table of Contents

JUNE 2.....	8
KEYNOTE: 'The Sustainable State' of STS.....	8
TRACK 1: Art, Science, and Technology Studies (I).....	8
TRACK 2: What Worlds do Workshops World?.....	9
TRACK 3: Design, Interfaces, and Bodies.....	10
TRACK 4: Science: Attitudes, Doubt, and Bias.....	11
DASTS General Assembly.....	12
AnTech book reception: The Palgrave Handbook of the Anthropology of Technology.....	12
TRACK 5: Art, Science, and Technology Studies (II).....	12
TRACK 6: Productive Breakages: Repair and Renewal of Algorithmic Systems.....	14
TRACK 7: Commercialization and Ethicalization in policy-making.....	16
TRACK 8: Data Work in the Public Sector.....	17
JUNE 3.....	18
TRACK 9: Caring and Commoning in/through STS interventions.....	18
TRACK 10: Ruptures Through Re-politicizing Technified 'Facts' on Sustainability.....	20
TRACK 11: Climate Imaginaries.....	22
TRACK 12: Values in Care and Treatment.....	23
TRACK 13: Approaching Platform Work.....	25
TRACK 14: Designing the Socio-Technical Design Research & STS.....	27
TRACK 15: Responsive and Responsible Technologies.....	28
TRACK 16: Civic and Industrial Epistemologies.....	29
KEYNOTE: Science and the New Constitutionalism.....	31

JUNE 2

KEYNOTE: 'The Sustainable State' of STS

Anders Blok Jensen, University of Copenhagen

TRACK 1: Art, Science, and Technology Studies (I)

Chair: Hannah Star Rogers

Art, Science and the Politics of Knowledge

Hannah

Star

Rogers

Art and science are not as different from each other as we might assume. This paper will draw on the ASTS handbook to consider how the tools of science and technology studies (STS) can be applied to artistic practice, offering new ways of thinking about people and objects that have largely fallen outside the scope of STS research. The ASTS handbook offers many examples of art-science engagement and places STS scholars in the role of interpreters, critics, facilitators, and even creators. Arguing that the categories of art and science are labels with specific powers to order social worlds—and that art and science are best understood as networks that produce knowledge—I will show, through a series of cases from contemporary art and biology, the similarities and overlapping practices of these knowledge communities.

The STS-Curator: New configurations of the 'curatorial analytic' in

The World is in You

Kristin D. Hussey, Postdoctoral Fellow, University of Copenhagen – Medical Museion/ Novo Nordisk Foundation Center for Basic Metabolic Research (CBMR)

This paper is a reflexive analysis of my own role in the conception and production of a film titled *Time Animals* (2021) from the perspective of the 'STS-Curator'. *Time Animals* was the result of a two-year collaboration between myself and an artist named Isabella Martin, inspired by my ethnographic work in the laboratory with a group of circadian scientists. The film explores the embodied feelings of the scientists as they work around the clock studying circadian rhythms. At the same time, this piece was a key commission for Medical Museion's recent exhibition *The World is in You* – a large scale art-science project for which I served as co-curator. So where did my STS research and curatorial practice begin and end? Where does this leave artistic and scientific collaborators? And how does this complex subject position of the STS-Curator work in practice?

In order to answer these questions, I want to think with Hanna Rose Shell's (2021) notion of 'curatorial analytic', which describes curating as a knowledge-producing analytical process. The entangled process of producing STS research, an exhibition, and an artwork simultaneously troubles Shell's notions in several ways. First, I want to interrogate what is meant by 'curatorial'. Secondly, I want to expand Shell's notion to see what happens when more than one person performs the analytic. I will suggest that navigating the challenging subject position of the STS-Curator requires a particular set of conceptual and interpersonal skills. In particular, I want to explore the importance of play and 'intellectual modesty' (Ballantyne 2019) for creating productive art-science-STs collaborations.

Resonant and entangled – sound-based approaches to intersections between art, science and technology

Eduardo Abrantes, Roskilde University

Arguably, the greatest potential of intersections between art, science and technology lies not in bringing forth new knowledge, but in manifesting complexity and entanglement – from fluid borders to misplaced translations, from curious frictions to mixed results, from wow to wonder (-ing what was the point?!). These interdisciplinary encounters are thus frequently most productive at their most frustrating, the most meaningful knowledge often occurring in the attention to the vitality of process, in its rhythmic fluctuations between epiphany and perplexity, rather than in the expectation of the outcome.

In my specific practice as an artist and artistic researcher, I navigate this entanglement through performative and sound-based strategies. Using technological methods such as sonification, spatialization, live-streaming and manipulation, but also movement, voice and collective embodied techniques, my focus is often the “migration” of knowledge through different experiential schemes – cognitive, situated, immersive, narrative, affective. A migration which I have recently come to understand as metabolic in its essence – encompassing change, being generative and eluding fixed categories.

In this presentation, I wish to focus on discussing this migration of knowledge, how it is mediated by sonic strategies, how to fully acknowledge process as a productive outcome and, finally, how to manifest it to the public. My contribution is inspired by two recent artistic research projects made in collaboration with the Medical Museum in 2021. The sound installation and performance-lecture “Worm-whole” for the Living Room project, and the sound installation “Gut and Psyche - a close listening” with researcher Tine Friis, for the TWIY exhibition.

Respondent: Louise Whiteley

TRACK 2: What Worlds do Workshops World?

Chair: Peter Danholt

Vapourshops?

Peter Danholt, Associate professor, Centre for STS-studies, Aarhus University.

In this presentation, I want - somewhat provocatively - to propose reconceptualizing the workshop as vaporshop. I thereby suggest that what emerges in workshops is vaporous: it may dissolve and evaporate into air or it may condense and solidify into something more concretely. The term makes explicit the event-like character of workshops, but also the risk implied in this. It enacts the workshop as airy, equivocal, experimental, open-ended and multiple etc. This might be a trivial insight, but more importantly, it may lead us in two opposite directions: we might consider this to be a ‘good thing’, namely, workshops as creative and productive events. Or in contrast, we may be concerned about on what grounds ‘matters’ are being produced and constituted. I will explore the different ontological assumptions underpinning these two directions. The first one implying the networky, non-essentialist, affective and more-than-human qualities of the, but as a consequence it also enacts the workshop as less accountable. The other being more positivist, essentialist and restricted, but accordingly more accountable. Based on Isabelle Stengers work, I hope to develop a way of thinking about and practicing workshops as being conditioned and obligated in specific ways in order to overcome the abovementioned problem of equivocation.

Living the Workshop Life: The users, the games, and the unintended consequences

Torben Elgaard Jensen & Ann-Sofie Hjelt Thorsen, Aalborg University

The participatory design movement’s iconic images of workshops where designers and users co-create future technologies by means of low fidelity materials have captured the minds of designers and STS scholars alike with their prospects of humanity, collaboration, and democracy. In reality, designers spend very little time gathering requirements from users; The overwhelming part of the designers’ representations of users come from other sources such as parallel technologies, industry standards, business models, regulatory demands, folklore, speculation and much more (Hyysalo & Johnson 2016).

In this paper, we present an ethnographic study of the work of a design team during a 12-month period. Although the team’s direct interaction with users was only a small part of the total work, the team’s work could well be characterised as workshoppy and user-oriented. The team participated in an abundance of workshops and meetings during which a variety of ideas about future users were deliberated and negotiated. We analyse how different constellations of user presentations took front and backstage as the project progressed, and we identify how the designers engaged in a series of different ‘games’ during the project.

We conclude by reflecting on how the flow of workshoppy events performed an efficient and pragmatic user-orientedness, while also generating several unexpected outcomes that only gradually dawned on the designers.

Giving voice to old garments through e-mending workshops

Seçil Uğur Yavuz , Free University of Bozen-Bolzano, Faculty of Design and Art

Fast fashion continuously produces ephemeral garments as result of planned obsolescence. Therefore, many products end up in landfill without following a circular life-cycle. Repairing practices are fundamental activities that can prolong the life of garments while making the users creating emotional bonds with them. Repair Cafes and mending workshops are places in which people can share and learn skills and knowledge on how to take care of their garments in a collective setting. The Abiti Parlanti workshop series brings a different dimension to the existing community workshops by bringing e-textiles into play. The workshops took place in two different locations in Italy, during the Fashion Revolution event. The aim was enhancing the emotional durability of garments by integrating sensors and actuators for a temporary period. The workshop consists of three main steps: storywriting, e-mending and performing. In the storywriting stage, the participants write a story about the garment and define a sound/voice that the garment might transmit about its story. In the e-mending stage, they use conductive yarns to mend or personalize their garment with embroidery and stitching techniques, thereafter turn these mended parts into touch sensors connected to a micro-processor embedded with sound files. In the last stage, through touching the garment, each participant can make their garment talk and this lived experience leads to a collective discussion about the role of clothes as a surface witnessing our everyday lives, rather than a mere cover that loses its value when it is out of fashion.

TRACK 3: Design, Interfaces, and Bodies

Chair: Lone Koefoed

How to get divorced online: Rethinking public sector user interfaces with rites of passage theory

Anine Hansen & Lone Koefoed Hansen, Aarhus University

In this paper, we discuss the intersection between digital bureaucracy and relationship, and the dissonance that can occur when the two meet. Specifically, we explore how a public sector digital user interface might accommodate and support an emotionally complex life transition. Starting from a specific user experience, the paper analyses the UI design of the current official Danish self-service form for applying for divorce, with a focus on how its underlying usability paradigm affects the experience of this life-transition. Imagining a different paradigm for public digitization, the main part of the paper presents and discusses an alternative design of a UI for seeking divorce. As a speculative proposition, this design takes inspiration from theories of rites of passage whose purpose is to create a societal structure for an individual's coming to terms with a new identity when transitioning between life stages. In the case of seeking a divorce online, the premise of this speculative proposal is to use the fully online format of the form to support the divorcee's emotional state through ritualistic actions. In this way, the paper contributes to the discussion of how paradigms, criteria, expectations, and requirements for public digitization affect and potentially support the well-being of citizens.

Reparatory Design, sustainable ecologies of embodied practices, vulnerable knowledge, and resilient methodologies.

Luis Guerra, BAU University Center of Arts and Design Barcelona and University of Barcelona

Design has been, and is, a fundamental agent in the industrialized transformation of the context of social production. Given the current conditions in which we find ourselves, and the acceleration of social changes occurring at different levels, should we perhaps consider in design, in its processes, in its forms of development, reparative models, that is, models that coincide and consider as objectives of their compositions models of social justice, democratization and participatory inclusion? In the face of an ecological crisis, of social sustainability, of community reorganization (human and non-human), what is the role that design as a practice should assume and consider? And implicit in this question is the research and teaching work of the pedagogical institutions of the design of the future: what is the role of university institutions in the training of designers for a world in accelerated transformation? How, or in what way, should these formalizations of a design that considers its role, its agency, as a contributor to the construction of future (current) sustainable

societies be assumed? What is a reparative model in design, or models of reparative design? How, or where would thinking from a reparative perspective of design lead us? This paper explores the existence of embodied practices, vulnerable knowledge and resilient methodologies in contemporary design, and their implications within the frameworks of the economy, industry and the academic field.

TRACK 4: Science: Attitudes, Doubt, and Bias

Chair: Pablo Velasco

Ungendered writing: Language patterns are unlikely to account for gender differences in funding rates in the natural and technical sciences

Serge P.J.M. Horbach, Maxime Sainte-Marie & Jesper W. Schneider, Aarhus University, Danish Centre for Studies in Research and Research Policy

Like in several other sectors of society, academia has traditionally faced a substantial gender gap in staff positions and career path progression. Despite an increasing rate of female students entering the academic system, women do not advance up the academic career ladder in the same rate as men, with evidence of gender bias in hiring, earnings, funding, and recognition by means of prestigious awards.

In this study we focus on gender differences in funding applications. Multiple factors have been proposed as potentially underlying mechanisms creating differences in funding rates between men and women, including bias in peer review processes and differences in language use. In this study we use a set of 1560 full-text applications in the natural and technical sciences that were subjected to a double-blind review process at a Danish private funder to analyse gendered writing as a potential factor causing differences in funding rates. The double-blind review format should neutralise circumstantial factors related to applicants' backgrounds or past performance. Analysing patterns in the use of positive words, levels of readability, concreteness and sentiment, we only find minimal differences in writing style between the sexes. We conclude that writing styles are unlikely to account for skewed funding patterns and suggest ways in which funding programmes can be designed to provide fair opportunities to all applicants.

Loving life? Loving science? Life satisfaction predicts public attitudes towards science

Simon Fuglsang, CFA, Aarhus University

Research into public attitudes towards science have largely prioritized investigation into how knowledge, ideology/partisanship and religion shape individual perceptions of science. This paper proposes another avenue of understanding science attitudes, by turning attention to local psychological factors as roots of science attitudes. I specifically theorize that subjective state of life is a source of individual attitudes towards science. To get at this empirically, I investigate how life satisfaction relates to five science attitude domains, hypothesizing that negative evaluations of state of life breed negative evaluations of science. While life satisfaction is intuitively distant to science, I argue that life satisfaction should matter for science attitudes in two ways. First, life satisfaction is employed as a proxy of how successful science is in changing lives/society for the better. Second, negative attitudes towards science are adopted as an externalization of a dissatisfactory state of life. I study this in a cross-European survey (n=37,097) modelling my proposed relationships as multivariate fixed-effects regressions. Findings show a substantial correlation between life satisfaction and science attitudes across all included domains, of a magnitude comparable to or surpassing standard predictors of science attitudes, though results regarding the mechanisms of the relationship are inconclusive. These findings have implications for science and society relations, suggesting that seemingly distant life experience and/or psychological predispositions might shape how the public reacts to science communication or institutional outreach. I discuss implications for efforts towards bridging cleavages between science and society.

The Benefit of the Doubt: Rethinking critique in/of scientific knowledge

Marie Larsen Ryberg, Department of Science Education, University of Copenhagen

The relation between critique and scientific knowledge has become a perilous conundrum. The precarity of this relation is conspicuous in recent ‘post-truth’ dynamics, but also in STS where established critical approaches to scientific knowledge have been subject to devastating (self-)criticism (cf. Jasanoff & Sinnott 2017, Latour 2004, Sismondo 2017, Fuller 2017). This paper explores an aspect of critique often left unnoticed, namely that of *doubt*, asking whether it might provide a pathway for rethinking critique in and of scientific knowledge.

Taking its point of departure in ethnographic fieldwork on efforts to integrate research in teaching at the University of Copenhagen, the paper examines students and researchers’ expressions of and ways of tackling doubt in processes of scientific inquiry and research.

Discussing these expressions of doubt in the light of what has been termed the ‘positivity of doubt’ in American pragmatism and its recent developments in French pragmatism, the paper considers the implications of these doubtful moments for how we might cultivate new forms of critique in and of scientific knowledge today (Ogjen 2014, Dewey 1910, Thévenot 2011).

While acknowledging the dilemmas of the different rationalities guiding critique and disciplining in mass education and research, the paper argues for a renewed concern with doubt as a pathway for circumventing ready-made constructs and instead cultivating modes of critique sensitive to contingencies and unforeseen events. Living with ruptures, it suggests, might call on the ability to harvest the benefits of doubt.

DASTS General Assembly

More information at <https://www.dasts.dk/>

AnTech book reception: The Palgrave Handbook of the Anthropology of Technology

The Palgrave Handbook of the Anthropology of Technology

Edited by Maja Hojer Bruun, Ayo Wahlberg, Rachel Douglas-Jones, Cathrine Hasse, Klaus Hoeyer, Dorthe Brogård Kristensen, Brit Ross Winthereik

This Handbook offers an overview of the thriving and diverse field of anthropological studies of technology. It features 39 original chapters, each reviewing the state of the art of current research and enlivening the field of study through ethnographic analysis of human-technology interfaces, forms of social organisation, technological practices and/or systems of belief and meaning in different parts of the world.

The Handbook is organised around some of the most important characteristics of anthropological studies of technology today: the diverse knowledge practices that technologies involve and on which they depend; the communities, collectives, and categories that emerge around technologies; anthropology’s contribution to proliferating debates on ethics, values, and morality in relation to technology; and infrastructures that highlight how all technologies are embedded in broader political economies and socio-historical processes that shape and often reinforce inequality and discrimination while also generating diversity. All chapters share a commitment to human experiences, embodiments, practices, and materialities in the daily lives of those people and institutions involved in the development, manufacturing, deployment, and/or use of particular technologies.

TRACK 5: Art, Science, and Technology Studies (II)

Chair: Adam Bencard

***The World is in You* – blending art, science and history to explore how environments shape bodies**

Adam Bencard, Associate Professor, University of Copenhagen – Medical Museion/ Novo Nordisk Foundation Center for Basic Metabolic Research (CBMR)

Nestled within one of the core questions of the Anthropocene – how are we changing our environments? – lies an inverse and interrelated question: How are our, ultimately planetary, environments changing us? This question was the motivation for the transdisciplinary exhibition *The World is in You*, curated by researchers at Medical Museion and opened at Kunsthal Charlottenborg in September 2021. The exhibition featured the work of 27 Danish and international artists, as well as numerous scientific and historical objects, ranging from an experimental gut fermentation system used in contemporary microbiome research to historical archival material from the Dutch Hunger Winter in 1944. The exhibition was structured through four thematic areas (Time, Space, Microbes and Generations) connected to emerging biomedical research areas (chronobiology, space medicine, microbiome research and epigenetics respectively), focusing on the deep questions of entanglement between environments and humans contained in each.

Curatorially, the exhibition aimed at creating a shared space between science, art and cultural history, by insisting that the open questions raised within science refuse to be settled within one domain, spilling over into art, history, culture, politics and philosophy. Proceeding from Des Fitzgerald and Felicity Callards notion of the intra-disciplinary, the exhibition attempted to create a space for questions that neither belonged completely to nor could be contained within singular disciplines or approaches, instead coming from the space in-between. Ultimately, the exhibition aimed at stimulating a shared and open conversation about what it means to collapse the distance between body and world, conceptually and curatorially. This talk tackles a central question and challenge, which drove the curatorial process: What are the challenges and possibilities of creating conceptual as well as physical spaces that allow for both movement between, resting in the middle of and perspectives across art, science and history?

Adam Bencard is Associate Professor at the Novo Nordisk Foundation Center for Basic Metabolic Research and at the Medical Museion in Copenhagen. His work is split evenly between practical science communication (mainly curating exhibitions, including the award-winning exhibition experiment *Mind the Gut* and the recent exhibition *The World is in You*) and theoretical research. His research interests are focused on issues concerning presence, embodiment, aesthetics, and what it means to be human in a postgenomic world.

Failed communication as a creative resource in art-science-STS collaborations

Louise Whiteley, Associate Professor, University of Copenhagen – Medical Museion/ Novo Nordisk Foundation Center for Basic Metabolic Research (CBMR)

Communication is central to collaboration, and failures of collaboration are often explained as failures of communication. In this paper, I argue that failed communication does not imply a failure of the collaboration that frames it. Rather, I suggest that communication failure should be seen as a source of creativity, and of recuperative potential for relations between forms of knowledge. I explore these ideas through art-science collaborations, which are often held up as both prime examples of the difficulty of ‘translation’ between disciplines, and as prime examples of where common languages can nonetheless be found. Specifically, I draw on case studies from Medical Museion where we have developed a practice of facilitating collaborations between art, science, and an STS or humanities discipline. Inspired by STS literature on failure, and on misbehavior and silence in science communication events, I examine what we learn by *not* understanding each other, and focus on the communication of values, virtues, and affects, rather than the communication of concepts, methods, and ideas. I identify particular moments in the collaborative process where communicative tension and breakdown occur, finding that capacity limits rather than limits of will or possibility are usually at stake. Further, recognizing this, rather than trying to resolve differing priorities, can unite collaborators in finding a mutually acceptable solution. Drawing from artistic and curatorial practice, I suggest that using juxtaposition and collage as metaphors and techniques can help us exploit the potential of failed communication. I conclude by posing some questions about how far this can go – should we acknowledge, celebrate, or even encourage failure? What are the ethics of celebrating misunderstanding?

Udredning-Udtrykt / Expressing 'undergoing diagnosis'

Christopher Gad, Associate Professor, PhD, IT-University of Copenhagen

Parents to children undergoing socio-medical diagnosis (udredning) in Denmark live through a range of unfamiliar experiences with authorities, institutions, the child, and themselves as families. It would be an understatement to claim that this situation is often marked by uncertainty, it is resource-draining, and it is a situation in which it is difficult to find a stable foothold.

One common theme amongst such parents seems to be that they must often become the 'project manager' or 'their own caseworker', as the institutions and institutional actors they encounter when seeking a diagnosis quickly multiply and are in many cases not well-coordinated. Or in the parlour of STS, they become the partial managers of the infra-structure for their child's diagnosis. For instance, parents often become the caretakers of the increasingly complex story of their child, which is important not only in the various encounters with institutions for something to happen, but also in relation to their families, neighbors, and friends.

This talk is a report from an ongoing research through design project on giving expression to this situation. It first consisted in conducting a qualitative investigation of the experiences of parents to children, who have been through such a process. Followingly the project has been concerned with transforming the empirical material gathered into an art/design installation which may hopefully work to enable a broader conversation on the issue. The presentation will be about how the research developed from its initial motivational ideas - to its present state.

Respondent: Kristin Diana Hussey

TRACK 6: Productive Breakages: Repair and Renewal of Algorithmic Systems

Chair: Minna Ruckenstein & Dorthe Brogaard Kristensen

Uncomfortable knowledge and clumsy solutions: Productive breakdowns in everyday cybersecurity practices.

Laura Kocksch & Torben Elgaard Jensen, Aalborg University

Cybersecurity is commonly framed as a matter of "weak" technologies, and even "weaker" humans that capacitate hackers by allowing access to machines and data. While the common narrative is that if technologies were adequately patched up and updated, and users trained and nudged, cybersecurity risks could be mitigated, there is also an austere understanding that conclusive cybersecurity will not be reached.

In this paper we argue that existing cybersecurity efforts are limited to modes of repair, attempting to "fix" both human and technological weaknesses. We argue for a better understanding of the productivity of cybersecurity practices beyond repair, where algorithmic systems sustain despite fragility and inconclusiveness.

The paper presents insights into an ongoing ethnographic study on cybersecurity practices in Danish SMEs. Drawing on Stephen Jackson's (2013) call to attend to erosion and decay rather than novelty and innovation, we look at how Danish SMEs mitigate the fragility of their algorithmic systems in relation to cybersecurity incidents. SMEs, in particular, lack the resources to attain elaborate cybersecurity mechanisms or conduct thorough testing. Rather than receiving formal training in cybersecurity, their engagement with the topic is circumstantial, specific, and occasional. Their cybersecurity practices rely on noticing when something is "off", having informal ways of communicating about cybersecurity and situated tactics to handle daily breakdowns. Rather than aiming for repair or renewal, SMEs rely on working with what is there, enduring uncomfortable knowledge with clumsy and improvised solutions.

Potentials and precarities with uncertified and certified eDevices in epilepsy care

Frederike Fahse, Ph.D.-student, Zealand University Hospital and University of Copenhagen

Henriette Langstrup, University of Copenhagen

In recent years, there has been a great increase of consumer-oriented and clinically certified health technologies available and these have become an integral part of national health care strategies in most European countries, including in Denmark and Germany. This is also the case in epilepsy, where eDevices have found their way into the lives of patients, transforming both treatment and care practices.

eDevices such as wearables and apps offer arrangements in which both patients, their relatives and health professionals in principle can respond more adequately to care needs with the help of real-time data and advanced algorithms. In practice, there are several challenges such as high rates of false alarms connected to the use of eDevices in epilepsy care, which this project seeks to explore through the lens of breakage and repair work. In this paper, we will share preliminary results from a comparative ethnography in Denmark and Germany exploring how algorithmic assemblages (Schwennesen 2019) become part of and transform epilepsy (self-) care in the two countries.

How do people with epilepsy and their caregivers navigate the many technological choices, possibilities and precarities within different health systems and different degrees of digitalization? We will discuss how the conceptualization of breakage and repair work can be used in this empirical case to uncover imaginaries and the values connected to the use of eDevices in epilepsy care.

Algorithmic Enactments: exploring the making of an early warning algorithm

Maja Hojer Bruun & Eva Ladekjær Larsen, Aarhus University and Aarhus University and Regional Hospital Horsens

Development of machine learning based algorithms for the health care sector is currently booming, promising results in terms of diagnostic accuracy, predicting illnesses, screening and triaging patients. Yet, many AI applications in clinical settings are failing due to a neglect of clinical contexts and difficulties with interdisciplinary collaborations. Anthropologists working and conducting research in such interdisciplinary futures-focused spaces can help bridge practical and epistemological gaps and contribute with new understandings of the translational roles that involved participants can take to improve collaborations and ultimately build better technology futures.

xAI-EWS is an explainable AI model, based on machine learning and using data from electronic health records, designed to predict acute critical illness and developed as part of a larger research and innovation project at Regional Hospital Horsens in Denmark involving medical doctors, nurses, data scientists, UX designers and anthropologists, among others. In this paper we explore how the algorithmic system is taking shape in a negotiation process between software engineers, project managers, and health professionals. We are particularly interested in the ways professional expertise is articulated, negotiated and transformed in this process.

The paper builds on long term participant observation in Danish hospitals and interviews and ethnographic conversations with a number of the involved partners, both programmers of the algorithm, data scientists, UX designers and health personnel. Attention to work practices and participatory mapping of the workflows, data infrastructures and use of data and other technologies help us outline the collaboration, and potential misunderstandings and conflicts, between different groups of professionals.

Algorithmic futures and the unsettled sense of care

Minna Ruckenstein & Sonja Trifuljesko University of Helsinki

In this paper, we offer an analytical approach that combines broken world thinking with the notion of the 'unsettled sense of care', proposing it as a move forward in the societal debate currently raising concerns about the biases and discriminatory qualities of automated decision-making (ADM). A credit-scoring case documented for the AlgorithmWatch report illustrates the risks of using machine-generated models, yet we should still avoid generalising about ADM based on individual cases, as discriminatory futures are not the only possible scenarios. The anthropology of futures supports an exploration that clarifies the diverging and partly contradictory notions of what ADM does, and to whom, and highlights its legal and political tensions and consequences. The meanings and values of ADM systems are negotiated; thus, they might not be stable in any way, as they are connected with the changing imaginaries of the benefits and dangers of implementing them. We argue that in order to

explore ADM futures we need to arm ourselves by thinking with care, committing to concerns that are currently neglected, and bridging elements that appear unbridgeable.

TRACK 7: Commercialization and Ethicalization in policy-making

Chair: Kasper Schiølin

Staging Difference: Scripts, Experiments, and Artificial Sociality in Japanese Robotics Laboratories

Frederik M. Vejlin, Aarhus University

In this paper, I build on fieldwork in Japanese robotics laboratories and discussions of sociality and experimentation in anthropology and STS to investigate the making of socially interactive robots and their use as experimental systems. I consider two issues that figure in discussions among roboticists and critics of the field alike. Firstly, I question the replication of human sociality as the benchmark for success in social robotics (cf. Breazeal 2002). Instead, I suggest understanding social robots as experimental systems for enacting alternative forms of sociality, while also potentially reconfiguring what human sociality is and can be. I propose the concept of artificial sociality to describe such processes of experimental reconfiguration. Secondly, I explore the processes of scripting involved in both the design of robotic systems and HRI experiments, which is often considered an obstacle to 'genuine' sociality. Here, I compare the performance of scripts in four different settings – a seminar, an interview, an article, and a documentary – all involving presentations on and discussions of what I call the Curious Robot Experiment (see Doering et al. 2019). In doing so, I lean on Steven Brown's (2012) reflections on the resemblance between psychological experiments and stage theatre to show how processes of scripting, rather than necessarily producing controlled and pre-determined illusions of interaction, might enable the enactment of alternative figurations of sociality difficult to achieve by other means. In closing, I discuss how this reconfigures – rather than repairs, maintains, or (re)constructs – human forms of sociality.

The Co-production of European AI Ethics: Insights from a Project in the Making

Nina Frahm & Kasper Schiølin, Aarhus University

In this presentation, we outline the reasoning, methodology, and preliminary hypotheses of our recently launched research project The Making of European Ethics of Artificial Intelligence (MEEAI). The project critically explores the recent surge of ethical deliberation around AI in the European Union, and asks what kinds of futures are negotiated through the making and performance of a distinctively 'European' AI Ethics. In the presentation we will relate our previous work on innovation governance to the overall co-productionist question that guides the project: How are European 'values' mobilized in the making of European 'AI-ethics' and how is 'AI ethics' mobilized in the making of a European 'Union'? We further explore how European AI-initiatives seek to create sovereignty and competitive advantage through 'fostering a European approach to AI' and by promoting 'AI made in Europe'. To approach these questions, we study AI ethics as a mobile and multiply situated object that emerges at the intersection of supranational, national and corporate governance realms of AI. In the presentation we will provide a brief overview of our planned ethnographic fieldwork, as well as insights into our ambition to map the European discourse of ethical AI. The research-design is in-the-making and we hope that the DASTS community will help us improve and refine it.

Into the valley of death: nanotechnology and isomorphic difference in US policy-making.

Aixa Y. Alemán-Díaz & Alan Irwin, Copenhagen Business School

The commercialization of nanotechnology research has been central to the National Nanotechnology Initiative (NNI) in the United States since its inception in 1999. Commercialization efforts within the NNI target the so-called gap between basic research and the marketplace, often referred to as the 'valley of death'. Countries in Europe and Asia have established their own programs with similar aims.

Ideas of research commercialization have travelled worldwide, but their particular contextualization and enactment can take different forms across settings. We employ the concept of isomorphic-difference (Irwin, Vedel and Vikkelsø, 2021) in order to explore how global ideas within science, technology and innovation (STI) policy travel and take shape locally. In particular, we explore how the 'valley of death' trope gets domesticated within the NNI. This can be seen as a standard and much-reproduced representation of research-market relations. Yet, we point to the ways in which it is situationally enacted and co-produced. The metaphor might stay the same, but its specific meanings can vary substantially.

Reviewing policy documents from 1999-2021, we show how the increasing intentionality attached to the commercialization agenda obscures a complexity of meanings and processes that have changed to accommodate expanding and intensifying priorities over time. These isomorphic difference relations captured in the 'valley of death' extend STS notions of continuity and change in STI policy by showing how, in their evolution, the commercialization agenda gets caught up in increasingly intricate institutional, social and political framings. It raises new questions are raised for the relationship between STS and public policy-making – especially with regard to local strategies in the face of apparently globalizing pressures.

An Always Ethical Science: Public Policy and the Rise of Scientific Justice

Hilton Simmet

TRACK 8: Data Work in the Public Sector

Chair: Claus Bossen

Digital transformation and the HealthcarePlatform: Agency and socio-technical boundaries between professions

Claus Bossen, Aarhus Universitet

Naja H. Møller, Københavns Universitet

Digitalisering er en socio-teknisk proces, der medfører en redistribution af eksisterende opgaver og kompetencer og fremkomsten af nye. Processen medfører også forhandlinger og kampe om nye grænsedragninger mellem professioner, der får pålagt eller efterstræber forskellige opgaver i kampe om identitet og anerkendelse. Oplægget diskuterer disse socio-tekniske forviklinger ud fra en case om implementeringen af den elektroniske patientjournal, Sundhedsplatformen, i Region Hovedstaden og Region Sjælland. I dette tilfælde lykkedes det gennem en alliance mellem teknisk ekspertise, ledelse og teknologisk redesign at modstå en dequalificering af lægesekretærernes identitet og rolle og mindske forøgelsen af lægernes dokumentationsbyrde. Vi kan således af denne case lære noget om, hvordan man kan udfolde agens og forholde sig aktivt til socio-tekniske forandringsprocesser

Field Data in Focus

Adela Sobotkova, Department of History and Classical Studies, Aarhus University

Proponents of Open Science stress transparency and reproducibility of data transformation as well as tidy and FAIR data production, yet these principles are emphasized only once machine-readable digital data safely sits on a computer harddrive ([Stewart-Lowndes et al. 2017](#); [Wilkinson et al. 2016](#)). The collection of FAIR data – done by fieldworkers or lab assistants – is often excluded from Open Science and relegated to the margins of the Digital Data Lifecycle. The lack of visibility and prestige in human-mediated data capture is reflected in the lack of software designed to support degraded-network field- and lab- activities. In this paper, I discuss my experience with FAIMS Mobile - a generalized field data collection platform ([Ballsun-Stanton et al. 2018](#)) - during volunteer-run archaeological fieldwork in Bulgaria. The use of a robust platform allowed us not only to capture FAIR data in the field and minimize time spent in post-processing. It elevated our volunteers from data-workers to research-collaborators, as instead of transcription, digitisation, and file labeling (automated by the software), they could participate in the analysis.

The data work of medical secretaries in Danish hospitals

Casper Knudsen, PhD fellow, Aalborg University, Department of Planning

Medical secretaries have played a steadily more central role in meeting the growing need for health data since their emergence in the 1930s. With electronic health records (EHRs) and techno-optimistic prospects of the data automation potentials waiting just around the corner, the profession has continuously been targeted for redundancy. However, rather than succumbing to automation, they have acquired new tasks following from digitalisation and still exist as a central staff component in the health sector.

While there is a considerable base of research on the datafication of health care, the data work emerging from datafication has been given only little attention. Through a sociotechnical study of clinical-administrative data work of medical secretaries in contemporary Danish public hospitals my research aims to shed light on the tasks that constitute the work of the medical secretaries in relation to particularly patient trajectory and registration data.

Preliminary findings of the study support existing research suggesting that the decentralized ward based organization of medical secretaries in the Danish hospital context enable a combination of knowledge of both clinical, organizational and administrative domains, which prove essential in the work with data. Through roles such as that of being the 'registration responsible' and their work on clearing 'error lists' this unique combination of knowledge and skills constitute a context sensitivity which is instrumental in securing that data is kept as correct as possible and in bridging the constantly changing national and regional requirements for documentation into the everyday work at clinic level.

Making Reliable Data: Enacting and Negotiating Data Quality through Data Work

Asbjørn M. Pedersen, Aarhus University

In this paper, I explore how data quality is enacted (Mol, 2002) and negotiated through collaborative data work (Bossen et al., 2019) in a healthcare business intelligence unit (HBIU).

High data quality is critical to support decision-making, quality care, and management of healthcare. Nonetheless, it poses as a challenge to both business intelligence (BI) and healthcare in general, as accurate, timely, and reliable data is needed to develop meaningful BI products as well as data-driven healthcare. While discussions often focus upon data collection processes and how to improve these to ensure high data quality, this paper offers a new understanding of how data quality also come into being or fall apart through the oft-invisible, but necessary data work in healthcare business intelligence.

Drawing on insights from an ethnographic field study of a HBIU and semi-structured interviews, I trace how unreliable data is transformed into being reliable through different data work practices of data collection, processing, and visualization. Here, data quality is negotiated, contested, and maintained, when BI employees develop and deploy new BI products. Thus, one crucial aspect of the BI developers' data work practice is to work with data as 'registered reality' which must approach the healthcare staff members' 'experienced reality'. Meanwhile, they must collaborate with healthcare staff members to overcome challenges like changes and differences in registration practices, data structure, and organization to do so. Hence, data quality, I suggest, is enacted, negotiated, and contested through collaborative data work practices. This study will contribute to our understanding of datafication and data work as socio-material practice.

JUNE 3

TRACK 9: Caring and Commoning in/through STS interventions

Chair: Giacomo Poderi & Maurizio Teli

"My best competence is love"- Exploring Relational Perspectives in Sustainable Agri-Food Education: An Ethnographic Study of an International Master Course in Agroecology

Laura Brandt Sørensen, Stine Rosenlund Hansen, Niels Heine Kristensen, Institute for Human and Technology (IMT), Roskilde University

This paper explores educational practices in sustainable agri-food educations and the role of relational perspectives in an educational context. Educating professionals in sustainable agri-food systems has achieved particular attention as central for achieving the global Sustainability Development Goals. Courses in sustainable agri-food systems are becoming prevalent at many universities to provide students with a broad understanding of the complexities and interactions among the environmental, economic, and social dimensions of sustainability. In practice, however, there is little scientific knowledge about how different learning approaches accomplish this. This paper draws on an ethnographic case-study of a one-semester master course in agroecology, including interviews and participatory observations. Theoretically, the paper bridges existing theoretical discussions of practice-based, experiential learning and sustainability education with STS thinking and brings more-than-human relations into the context of education. The paper provides a new contribution to the development of sustainability agri-food education, as it shows that relational perspectives allow dynamic interactions, more-than-human relations, emotional and value-based aspects (love and care), to participate in the future-making of sustainable agri-food systems. Thus, these aspects are constantly negotiated through, and with, dominating scientific paradigms, discourses of sustainability, and activism, in the educational practice. The discussion in this paper is an attempt to acknowledge the unpredictable and neglected stories and doings as essential in how knowledge-practices come into being.

Controversy mapping and the care for climate commons - Re-assembling the Danish climate movement by counter-mapping digital network maps

Adam Veng & Irina Papazu, IT University of Copenhagen

The Danish general electoral campaign in 2019 saw a unifying culmination of the “climate movement”, as a diverse assembly of green think tanks, school children and direct-action protest groups succeeded in turning climate into the paramount political issue of the election. The government has since signed the “most ambitious Climate Act in the world”, however, the climate movement, alongside several scientific experts, has since expressed dissatisfaction with the government’s politics on the green agenda, while the government itself and its established networks of cooperate “climate partnerships” maintains to uphold an ambitious climate politics.

This paper is based on nine months of mixed-methods research, using the digital tools Hyphe, Gephi and CorText to map the relations between different public Danish actors (NGO’s, businesses etc.) and their “matters of concern” (Latour 2004) in the controversy of the Danish green transition. Inspired by literature on counter-mapping data science (Dalton and Stallmann 2018), it introduces an interventionist methodological experiment in using network maps as props for material participation (Marres & Lezeaun 2011) in a workshop setting with invited activists. As such, the paper seeks to explore how critical discussions of network maps can become a ‘prototype for prefiguration’ (Jiménez 2014) for mapped entities to collectively evaluate and re-invent both their position in a controversy and their methods for obtaining public impact. The experiment is framed by a discussion of the potentials of research collaborations with state-opposed commons and their politics of world-building (Zigon 2017, Caffentzis & Federici 2014) in the field of controversy mapping.

Maintain-ability. On Life Alongside Computer Software

Mace Ojala, IT University of Copenhagen

This paper, based on my recent thesis (Ojala 2021) examines what lessons about living with technology can we learn from software maintainers who struggle to keep digital infrastructures – at least most of the time – in good running order. The empirical material of the research was collected at four events as programmers convened to discuss breakage. Drawing on STS, I identify themes which concern programmers as they give testimony of their lives lived alongside computer software.

The findings firstly challenge the imaginary of existing software as an stable object, and secondly nuance and specify the notions of maintenance documented in research literature. Themselves well versed in conceptualizing breakage, software maintainers exercise considerable agency over the immediate material in their care; code. However in doing so, they also find themselves having to articulate dynamic, interdependent and hybrid networks of relations which they are intimately entangled with, and whose durability depends on the success of their ongoing, indeterminate reconfiguration. Both the programmers and the

software they maintain must continuously navigate risks of breakage, burnout, bugs or falling into obsolescence.

Inspired by feminist technoscience and in response to so-called broken world thinking (Jackson 2014), I theorize the concept of *maintain-ability* and demonstrate its application to foreground the situated, fragile and often underappreciated capacity to not only give but also receive care which holds together more-than-human worlds at the dawn of the third millennium.

Creative reuse in commons

Sanna Marttila & Joanna Saad-Sulonen, IT University of Copenhagen

Latching on to the research agenda on Commoning Design, which aims to support the designing with/in commons and co-creating conditions for participatory processes and practices as commoning, this presentation is interested in exploring the tactics and strategies created for sustaining and supporting collective creativity/making relying on commons. Our presentation draws insights from two specific instances of creative reuse and production: first, the cultural heritage hackathons as interventions to contribute to cultural commons, and second, the phenomena of DIY face mask designs during the Covid-19 pandemic. We look into both synchronous and asynchronous onsite and online commoning activities, especially practices of commons-oriented groups to bridge between different actors and entities that develop alliances to learn new skills and . Specifically, we explore what roles documentation and knowledge pooling, maintaining, and sharing plays in sustaining commons. In addition, we draw our attention to temporalities of commons, and probe political and ethical implications of creating new artifacts and designs building upon commons.

The presentation aims to connect and contribute to the ongoing discussions on how in practice, institutions and communities alike can create commoning strategies to socially govern and care for the commons.

Examining the role of care and reciprocity in human-soil relations as enactment of regenerative farming

Ane Kirstine Aarea, Laura Sørensen & Stine Rosenlund Hansena, Department of People and Technology, Roskilde University

The paper explores human-soil relations, as a theme calling for attention in the regenerative turn. With logics of the scientific revolution, soil has been perceived as a resource to control and exploit but a growing awareness is arising for the need of urgent ecological care. The paper seeks to illustrate the potential of applying STS thinking in turning towards the interrelatedness of non-human and human actors as mutual dependent collaborators of a regenerative life. The paper draws on empirical material from three studies in the field of regenerative agri-food systems: An ethnographic study of agri-food educational practices, focus groups with farmers in 9 countries, and interviews with 12 Danish farmers while doing soil assessment in the field. Through this material, the paper unfolds the way human-soil relations are entangled and with what consequences. The study shows that farmers' engagement with soil cultivates caring practices, where farmers change from being in control of soil, plants and animals to become learners that develop together with soil. This version of human-soil entanglements entails new ways of valorising 'good' food, as it challenges dominant enactments of quality food where original relations and interconnections with soil is preferably erased. Soil is also entangled with the futureness of humanity, universally and individually, and the relation of reciprocal care with future and past generations. Thus, examining these entanglements unearth a diversity of hope for an ever-changing and regenerative potential for life.

TRACK 10: Ruptures Through Re-politicizing Technified 'Facts' on Sustainability

Chair: Julia Kirch Kirkegaard

Facts and Politics of Air Pollution in Copenhagen

Steffen Dalsgaard & Rasmus Tyge Haarløv, IT-University of Copenhagen

The introduction of Google's Project Air View (PAV) in Copenhagen has re-invigorated local concerns over air pollution. In contrast to established techno-scientific networks which deploy well-known air pollutants as visible in accordance with European limits, the PAV has both contributed with fine-grained measurements as 'technified facts' at street-level and it has amplified the visibility of new and emerging objects of aerial governance such as ultrafine particles and black carbon over which there is yet to form scientific or 'factual' consensus. The objective of this paper is twofold: Firstly, we analyze the divergent and heterogeneous identifications and representations of air pollution in Copenhagen. Secondly, we discuss how groups of concerned citizens in their push against entrenched ways of thinking about air pollution are empowered by the PAV's fine grained air pollution visualizations in different ways. While some citizens deploy the PAV to (re)politicize pollutants stemming from aviation, busses, and smaller vehicles, others propose novel urban green designs in dialogue with municipal authorities. At the same time corporate and some governmental actors attempt to depoliticize the problem of air pollution by deferring responsibility to established conventions for which air pollution 'counts'. All in all, we argue that Google's contribution to the (re)politicization of air pollution in Copenhagen is a multi-faceted process, which solidifies existing political environmental contrasts rather than depoliticizing or solving them.

The Competition of Heat Pumps

Caroline Anna Salling, IT University of Copenhagen

This paper analyses the politics of competition through the policy-incentivised simultaneous installation of large and small heat pumps in Denmark. The heat pumps are prepared for competition with both old heating solutions as well as with each other in order to electrify and decarbonise. As district heating pipes are extended into new areas of towns and cities with the help of large heat pumps, small heat pumps are in policy and marketing offered as solution mainly to households that not (yet) have access to district heating. I have ethnographically followed district heating engineers in the city of Odense, Denmark, in putting heat pumps to work to utilise excess heat from servers within the nearby Facebook datacentre. The excess of hot, usually lukewarm, air from industrial machines is raised in temperature and converted into water that can flow in the pipes of the district heating and assist in phasing out fossil fuels.

Through three events – a course taught on thermodynamics to employees, the installation of heat pumps next to the datacentre, and a lobby meeting – competition is analysed as emerging through the implementation of thermodynamic theory and policy incentivising technology instalment. Experiencing competition is a rather new event for the district heating sector, which happens in contrast to the arrival of the monopolistically governed Big Tech hyperscale datacentre that draw several benefits from attaching itself to the community form of energy arrangement, as district heating is often described to be.

Infrastructuring the trouble: Sustainability reports, facts & expertise

Michael Hockenhull, IT University of Copenhagen

Danish and European law requires large corporations operating in Denmark to report on their sustainability initiatives. Simultaneously, financial markets are increasingly interested in investing in companies which perform well in Economic, Social and Governance (ESG) ratings and similar benchmarks. This has led to a steady rise in the quantity and importance of sustainability reporting, a process through which corporations purport to document how they are becoming more sustainable, decreasing their emissions and doing good in the world through measurements and the creation of facts.

Corporate 'greenwashing' and CSR spin is no new phenomenon, and it is thus easy to dismiss such reports as nothing more than branding. However sustainability reporting is simultaneously a practice which companies pour many hours of work into, procuring data, developing calculations, conforming to standards and which many corporate actors genuinely believe represent an attempt at positive action. It thus represents a 'trouble' (Haraway, 2016), in the sense that it is a pervasive practice which we may want to disregard as an expression of frivolous corporate non-action, but nevertheless is a site of practical fact-making.

This paper documents how a particular conception of corporate sustainability is being produced in this reporting practice, through the mobilization of particular laws, data, standards and expertises, before being expressed in reports. The reports are thus material-

semiotic actors that hold the potential for systematic study, interrogation and, perhaps, re-politicization. The paper finally outlines how digital and quantitative methods might help facilitate this work.

Instruments for sounding the alarm – how activists use technification and dramatization to critique wind turbine projects.

Daniel Nordstrand Frantzen, DTU Wind Energy

I aim to present preliminary findings from my ongoing empirical work on local controversies over wind farms in Denmark, conducted as part of my PhD within the Co-Green project. Departing from the theme of the panel, this presentation asks: If the green transition has become overtly technified, which conditions does this create for re-politicizing it?

In order to answer this question, I focus on the groups of local and ‘coincidental activists’ (Blok & Meilvang, 2014) who protest against specific wind farm projects. I inquire into the ways these groups acquire competences for criticizing (and hence repoliticising) the projects. Firstly, I argue that the activists employ ‘modes of technification’ (Tironi, 2015), that is strategies for becoming technical entities that can e.g. do critical readings of sound propagation maps or monitor endangered animals in the areas of planned turbines. Secondly I show how the activists ‘dramatize’ (Bijsterveld et al., 2008) wind turbines and their noise in personal stories, posters and spectacles in order to highlight what they find to be the problems of wind turbines.

Lastly, I discuss how these technified and dramatized critiques are met by the professionals in the field such as planners and noise experts. I suggest that the critiques cause ruptures as they do not quite fit the language and methods of the professionals. Hence the activists’ critiques are often not leading to much change of the projects.

TRACK 11: Climate Imaginaries

Chair: Pablo Velasco

Suspending Democratic (Dis)Belief: Technodemocratic Imaginaries of Solar Power in Morocco and Tanzania

Monamie Bhadra Haines, Technical University of Denmark

Sharlissa Moore, Michigan State University

Turner Adornetto, The Ohio State University

This paper proposes the concept of technodemocratic imaginaries (TDIMs) to supplement the widely-used framework of sociotechnical imaginaries (STIMs) for analyzing nonliberal political contexts in energy social science research. Taking the power of coproductionist analysis of STIMs seriously, TDIMs highlight the inherent instabilities and ruptures within overarching STIMs by arguing that not only are particular groups marginalized and excluded but that they continue to practice and mobilize their own imaginaries of collective governance and justice vis-à-vis energy systems. Also, in contrast to studies of contested STIMs, where a shared mode of (often elite, nationally-circulating) knowledge politics undergirds different imaginaries, TDIMs includes subaltern modes of political engagement and knowledge-making. TDIMs expand conceptions of democracy--often implicitly conceptualized as liberal democracy--to include shared practices of credibility in nonliberal political orders. The intent is not to promote democratic relativism but rather to ask scholars and international energy-access practitioners to suspend their democratic disbelief when studying energy matters in so-called nonliberal contexts. We develop the concept of TDIMs by comparing two African nation-states--Morocco and Tanzania--to show how the states and subaltern groups do (or do not) develop TDIMs related to solar power. While international governance organizations often portray Morocco as authoritarian and Tanzania corrupt, each state differently experienced (de)colonization, is part of different transnational assemblages, and practices different relationships with domestic subaltern groups. Whereas low-income citizens and indigenous groups seek integration into the Moroccan state’s STIM, the Maasai in Tanzania chart their own TDIM separate from the state and international development groups.

“The science is clear, our climate is changing”: Futuristic representations of climate risks

Antoinette Fage-Butler, Department of English, Aarhus University

A primary purpose of risk communication is to promote understanding and awareness of future potential dangers, so that action can be taken to minimise or avert the risk. In the various spheres of social action, however, responses to the grave and incontrovertible risks of climate change have been insufficient (Latour, 2017; Willig & Blok, 2021). The communication of risks includes the representation of aggravated versions of the risks, often set in the future. We see such representations in the “future scenario” figures of the IPCC (2021) report, while filmic narratives such as *Don't Look Up* warn about the catastrophic perils of indifference and neglect, despite risks being scientifically documented. The purpose of this paper is to analyse using discourse analysis (Foucault, 1972) and social semiotic analysis (van Leeuwen, 2005) the discursive representation of climate change risks in a futuristic weather forecast set in 2059 by the UK's Meteorological Office (2021). It finds that the risks of climate change are represented mainly as causing harm to public health and infrastructures, as inconvenient, intrusive and dangerous, and as needing to be taken seriously. The discourses underpinning the representations of the risks emphasise the strength of the scientific evidence, the primacy of health and quality of life, and the importance of taking collaborative action now. The paper discusses the findings in relation to research on climate risk communication and public engagement, the question of values in scientifically attested risks, governmentality theory, and the ethics of responsibility.

'Every man can choose his own climate': The Mechanics of Geoengineering in Jules Verne and Didier de Chousy

Sebastian Egholm Lund, Aarhus University

Questions of geoengineering have been widely discussed in recent years with scientists such as Erle Ellis claiming that technofixes will lead the way to a 'Good Anthropocene' while scholars such as Clive Hamilton highlight the catastrophic potential that climate engineering entail. However, there exists a lack of historical understanding of how symbolic forms in the past have imagined deliberate, anthropogenic alterations to the planet. My paper addresses this question by delving into two pieces of French science fiction: Didier de Chousy's *Ignis* (1883) and Jules Verne's *Sans dessus dessous* (1889). Specifically, I compare Chousy's satire of The Central Fire Company's desire to equalize the seasons with Verne's critique of The Baltimore Gun Club's attempt to melt the North Pole to show how both novels display climate engineering as the result of a mechanical worldview that sees planetary processes as reversible. I argue that both authors exhibit a scalar awareness in stressing the Earth not as a singular ahistorical object but as a multitemporal and multiform system. In conclusion, this paper, by examining the science fiction of Verne and Chousy, sheds light on the neglected issue of how recent discussions of climate engineering are based on past cultural and literary representations.

A state of emergency or business as usual? A three-dimensional perspective on the role perceptions of climate scientists, climate journalists and citizens in climate science communication

Peter Busch Nicolaisen, The Danish Centre for Studies in Research and Research Policy, Aarhus University

Abstract: The uncertain, disputed, high-stakes and urgent character of the climate challenge facing modern societies may alter the conventional notion of what is expected of scientists, journalists, and citizens in the public discussion of climate science. Based on an analysis of 15 focus groups with Danish climate scientists, climate journalists and citizens, this study will examine what the three actors expect of themselves and each other in climate science communication. The analysis shows that neither of the three actors want climate scientists and climate journalists to act as advocates, although there is agreement that it is legitimate for the former to express emotions connected to their findings. Overall, there was consensus among the actors concerning the *raison d'être* of climate science and climate journalism, while the appropriate information-seeking behaviour and involvement of citizens is more contested.

TRACK 12: Values in Care and Treatment

Chair: Astrid Meyer

Cooling the patient out: Distributed decision-making and heated debates over access to advanced therapies

Sarah Wadmann, Laura Emdal Navne & Amalie Martinus Hauge, VIVE – The Danish Center for Social Science Research

Gene therapies are increasingly being marketed in Europe and beyond. While therapeutically promising, the new therapies come with unprecedentedly high pricing. In welfare state settings characterized by ideals of equality and universal access, their introduction spurs debate about the distribution of healthcare resources. Based on a case-study of access restriction to a pharmacogenetic treatment in Denmark, this study explores how accountabilities are distributed and re-distributed when rationing decisions becomes an object of public scrutiny. Based on analysis of patient complaint cases and interviews with patients, relatives, and patient organizations, we find that patients are referred back and forth between organizational units when seeking to understand on which grounds treatment access is being restricted. As a parallel to Goffman's (1952) notion of 'cooling the mark out', we suggest that the institutional set-up meant to ensure procedural fairness and impartiality also serves to 'cool the patient out'. Goffman designated the process of 'cooling' to a specific actor, a 'cooler' who takes on the role of consolidating the upset 'mark', i.e. the victim of the situation. In this paper, we argue that it is the distributed accountability of rationing decisions that has a chilling effect on the heated rationing debates. From the perspective of political-administrative decision-makers, cooling may be necessary to ensure cost-effective resource distribution. For the patients who are being 'cooled out', however, the process does not always lead to acceptance of the circumstances: Attempts of cooling may prompt a renegotiation of the relationship between the self and society and fuel activism.

Journeys into stem cell treatment - Decision-making journeys into the promised lands of hope, trust, and unknowns

Anders Grundtvig, Copenhagen University, Department of Public Health, MeST

How does online information-seeking journeys for potential stem cell patients take shape? Stem cell research is a fast evolving and promising medical field. The field holds the promise to change and disrupt the way patients perceive medical care and provide new possibilities for patients that have few today.

Disagreements and disharmonies between the scientific community, government bodies and the broader public, complicates where and how to find information about stem cell treatment for potential patients.

Methodologically and ontologically positioned within the field of digital STS and controversy studies and equipped with state-of-the-art open-source programming tools, this PhD project asks; *how does the infrastructure of online stem cell treatment information impact trust to the established health care system? And how does it impact the decision making of whether to enroll for stem cell treatment?*

This PhD project suggests three independent but related sub-studies to study the overall subject of potential stem cell patient's decision-making journeys. 1) *Entry points* 2) *Public debates and opinion makers* 3) *Follow the information flow*,

1. The sub-study of *Entry points* focuses on the initial online places where potential patients visit and the first responses they meet.
2. With the sub-study of *public debates and opinion makers* I zoom out to gain broader perspectives of the field through a content-analysis-mapping to categorize discussions and opinions thematically.
3. *Follow the Information Flow* explores how information travels and evolves in online community networks among multiple actors and places

This PhD Project seeks to contribute with new insights into the sense- and decision-making process of a broad range of different types of actors contemplating stem cell treatment.

Privacy and Surveillance in Care Work

Stinne Aaløkke Ballegaard, Chief analyst, VIVE The Danish Center for Social Research

Astrid Meyer, PhD student, Aarhus University

Anders Albrechtshund, Associate Professor, Aarhus University

This paper explores how privacy is perceived and enacted in nursing home. The question of how privacy is enacted is related to a larger research question of how to create an ethical framework for use of surveillance technology in nursing homes. Thus, the paper explores the interplay between care, privacy and surveillance.

Through ethnographic fieldwork and interview-based investigation, we investigate perspectives and practices in which privacy is negotiated and contested. In our studies, we have observed how privacy is related to spatial layout of a nursing home, acts of care and body works, as well as to the physical presence and absence of care workers and surveillance technology such as passive infrared sensors, door alarms, GPS trackers and short live video feed.

While our research identify a mutual goal of preserving privacy while caring for the elderly, statements from caregivers, relatives, government officials and a juridical association point to a contested understanding of privacy and how the use of surveillance technology both supports and ruptures understandings of privacy. Some caregivers point out that the use of surveillance technology in some cases allows for more privacy and less intrusion than had a care worker been physically present. A juridical association and government officials, who perceive physical presence as less intrusive, however, oppose to this.

We discuss both lines of argument in relation to the practices of care, privacy and surveillance, as well as implications of these conflicting perspectives.

TRACK 13: Approaching Platform Work

Chair: Kalle Kusk

“This order is shit”: Negotiating with algorithmic management on a last-mile delivery platform

Kalle Kusk, PhD Student, Aarhus University.

This paper presents food delivery workers' continuous negotiations with the algorithm that organizes their work. Managing algorithms have proliferated throughout the last decade with some regarding their advent as a form of digital Taylorism and as the emergence of a new control regime (Cherry, 2016). Characteristics such as constant monitoring, information asymmetries and obfuscation have all been critically pointed out (Lee et al., 2015; Veen et al., 2020). However, studies also display how algorithmic management is not hegemonic, but rather allows for various types of worker responses (Ferrari & Graham, 2021; Kusk & Bossen, 2022; Veen et al., 2020). Building on ethnographic research as a food delivery worker, as well as ride-alongs and interviews with workers this paper argues that such a response is at the center of the arc of work (Strauss, 1985) on the last-mile delivery platform Wolt. The paper presents how some food delivery workers reflexively and strategically decide which orders to complete based on in-situ calculations contingent on factors ranging from their relative position to the restaurant and customer, the current demand on the platform and the speed of restaurants. The paper argues that the workers, through these calculations, to some extent shape their role in the division of work. Based on this, the paper problematizes assumptions that algorithmic management necessarily leads to a micro-managed and deskilled worker and stresses the necessity for both academic and regulatory granularity when situating and regulating algorithms in specific work constellations.

The human in and outside the app: Ethnographic studies of algorithmic management in digital platform work

Katrine Duus Terkelsen, Department of Anthropology, Aarhus University

Abstract: This paper is based on the collaborative work of 'The Danish Research Network on Platform work'. A central component in the narrative about digital labour platforms is that the workers are independent users of the platforms, rather than employed workers. This narrative especially rests on the digital platforms' use of algorithmic management. In this

paper, I challenge the conception that digital platform workers are mere users of the apps they work through, being managed only by algorithms. Drawing on ethnographic material from food delivery and cleaning platforms in Europe, I specify how different humans help uphold and maintain the systems of algorithmic management on the platforms. Overall, the platform workers and employees engage in different practices like self-management and problem solving among the platform workers, as well as assisted decision making and general support by platform employees. Concluding on these empirical findings, I argue that humans help uphold and maintain algorithmic management both inside and outside the app as they actively help shape the workflow.

With or without algorithms: Managing self-employed in the platform economy

Christian Haldrup, Anna Ilsøe & Trine P. Larsen, FAOS, University of Copenhagen

Digital labour platforms, such as Wolt and Uber, and their extensive reliance on solo self-employed have attracted much public attention (Bøgenhold et al., 2017; Vallas & Schor, 2020). Here, recent studies have suggested that labour platforms abrogate traditional management responsibilities and use algorithmic management to control worker behavior (Frenken & Fuenfschilling, 2021; Edwards, 1979).

In this paper, we explore how labour platforms how the management of self-employed workers on platforms genuinely unfolds in practice. Empirically, we draw on in-depth case studies of three distinct labour platforms (Wolt, Hilfr, Voocali) operating in Denmark (George & Bennett, 2005). To inform our analysis, we use concepts from employment law and the algorithmic management literature along with perspectives from SHRM (Kornberger et al. 2017, Benassi and Kornelakis 2021; Kristiansen, 2020).

Our findings indicate that labour platforms use a blend of traditional and algorithmic management practices as a way to stabilize (part of) their workforce. Traditional management is dominant concerning the hiring and firing of workers, whereas algorithmic management plays a larger role when it comes to direct, organize and control and evaluate workers. However, we also identify that certain management practices de facto are delegated to workers or customers, which makes the platforms unable to control for instance health and safety measures at work. We end the paper by discussing the implications of our findings in light of EU's recent proposed directive on platform work (EC 2021).

House cleaning platforms in Denmark: How does the past fit in the imagined future?

Konstantinos Floros, IT University of Copenhagen

In recent years, there has been great concern that contracting remote or localized work through digital labor platforms will shape the future of work and employment relations (e.g., Ilsøe & Larsen, 2020). Despite a lack of agreement within the literature on whether the platform economy has been growing in steady, fast or exponential ways, it is rather safe to admit that working through platforms is a consolidated work form in the global labor market, challenging traditional full-time, dependent employment. Both the Danish government (Regeringen, 2019) and EU institutions have stressed the need to cover growing demands for flexible employment through platforms which "create jobs and improve competitiveness" (European Commission, 2018). This paper combines digital ethnography, document analysis and interviews with housecleaners and stakeholders to investigate the nexus between flexible and precarious employment in Danish housecleaning platforms. It argues that the composition of the labor force working through these platforms and the everyday practices within platform housecleaning challenge the positive character attributed to the state-supported sociotechnical imaginary of the Danish platform economy and goes further to question whether such an imaginary exists or if it forms part of a broader Danish sociotechnical imaginary of the digitalization of everyday life (cf Jasanoff, 2015). In line with this year's DASTS theme the paper claims that digital housecleaning platforms build on the affordances inherent to the platform business model (cost-efficient algorithmic management, performativity of ratings, competition etc.) while sustaining "normal" (atypical, low-paid) employment conditions for the highly gendered and racialized workforce of housecleaners in Denmark.

TRACK 14: Designing the Socio-Technical Design Research & STS

Chair: Stefanie Eggers & Christian Lepenik

Prototyping the future, prototyping citizens – the Danish trial of ‘technology comprehension’ in public school

Simy Kaur Gahoonia & Christopher Gad, IT University of Copenhagen

This paper explores how the Danish school sector currently performs and reworks students’ engagement with digitalization through prototyping. Public schooling is routinely mobilized by the state as part of the solution to perceived societal problems. By law, Danish schooling should prepare students for participation, co-responsibility, rights, and duties in a democratic society. Recently, this includes preparing students for life in an increasingly digitalized democracy. We investigate the Ministry of Children and Education’s trial of ‘technology comprehension’ (2018-2021). This was an experimental effort to determine how to introduce ‘understanding of technology’ into compulsory schooling as a generally formative, creative-constructive, and critical subject matter combining societal reflection, computer science and design approaches. The curriculum suggested that design approaches, especially, were conducive to agency and empowerment in digital democratic life, making it imperative that students learn to materialize digital artifacts through prototyping. This takes prototyping beyond its traditional use in design and systems development, making experimentalism central to the conduct of citizenship and social life. We examine prototyping across the trial: the curriculum; the trial’s design; the classroom; and the trial’s evaluation. We argue that prototyping functions as a device for intervention in the complexity and uncertainty of a digital democratic future. In this situation, the capacity of prototyping is to keep matters of concern both open and closed across scales, and bind different sites of the trial together. We critically examine the role of the prototype in a democracy in ‘perpetual beta’ and the response: educating students to cultivate a design attitude.

Noticing Ruptures –The Role of Tacit Knowledge in Designing Intuitive Interfaces

Christian Lepenik & Stefanie Egger

The Invisible Lab

In our daily interactions, we seem to be blind to things we take for granted. When every aspect of our habits and every touchpoint of daily routines seem familiar and works as expected, the things around us become invisible to us. Everyday countless interactions with physical objects flawlessly dissolve in our behavior. Objects are integrated unnoticeably, becoming a natural extension of ourselves, e.g. brushing teeth, making a phone call, eating, riding a bicycle, sketching, taking pictures or writing texts. Only when a rupture in our perception occurs these interactions surface in our conscious awareness: e.g. the experience is unexpectedly joyful, an error occurs or the intended flow of action ends abruptly. A bottle seems impossible to open, an automatic door does not open as expected, somebody can’t operate the elevator because of holding something in both hands or buying a ticket becomes so laborious that they miss the bus. Explanations and models have been around for quite some time – Affordances (Norman 1988, Gibson 1973), Blackboxing (Latour 1994) or Scripts (Akrich 1992) – but what if we connect these to the concept of tacit knowledge? This talk about Things eluding our recognition will explore how designers can notice and harness ways of knowing and forms of (tacit) knowledge (Polanyi 1966) in order to create intuitive interfaces, connecting design processes with classic STS concepts.

Disruption and design through ‘aesthetic co-production’ in Engineering Entrepreneurship Education

Annika Skoglund, Daniel Aditya Tjhin, Arwin Zendeherokh

Uppsala University, Department of Civil Engineering and Industrial Management

Engineering Entrepreneurship Education has increasingly engaged in the social and environmental effects of Technology-Based Entrepreneurship (TBE), with demands to make society more participative in worldmaking seen as a responsible aesthetic choice related to design. We wish to delve deeper into the teaching and learning needed to understand participative processes in such choices, by pedagogic development of a TBE course called ‘Aesthetics, design and sustainability’, embedded in the curricula of Uppsala School of

Entrepreneurship. Pedagogically guided by a focus on aesthetic co-production, we suggest teachers can better foster engineering students' awareness of their own abilities to engage in disruptive configurations, which is fundamental to entrepreneurship, and worldmaking, which is fundamental to socio-technological progress. The aim is to advance and mobilize the concept of 'aesthetic co-production' in the classroom and beyond, with particular focus on how customers/users can be enabled to interact with the environment, designers, business developers and technology, to configure new knowledge through directed entanglements, materialized in the form of more sustainable technological solutions. We elaborate on this strategic process of participation by drawing on the experience of an engineering student from the School of Entrepreneurship, (co-author Arwin Zendeherkh), who currently is enabling an industrial partner to merge Additive Manufacturing with design and aesthetics to secure custom-made sustainable solutions. Since engineering students are particularly prone to base their worldmaking in expertise on technology, we suggest this pedagogic approach on aesthetic co-production is crucial for the creation of a shift in their understanding of the social and environmental effects of TBE.

Prototyping living spaces: How design as a sociomaterial practice can create sustainable worlds

Ruth Neubauer, New Design University, Austria

Ksenija Kuzmina, Loughborough University London, United Kingdom

Elke Bachlmair, Universität für Kunst und Gestaltung Linz, Austria

Standard home infrastructures are a major cause of wasteful behaviour (Kuijjer, 2014; Shove et al, 2007). The design of these infrastructures tends to be blackboxed and hidden from its users, propagating a lack of accessibility and control over the living space. In this paper we argue for rethinking the design of everyday technologies as a more transparent and open-source practice. In such an open practice, users will have opportunities to prototype their technologies and adapt their resource use to their core needs more efficiently, thus creating less waste over time.

The theoretical lens of sociomateriality makes clear how humans accomplish their everyday practices in "intra-action" with the material structures of technologies (Barad 2007). Through the proposed open source approach to technology design, users are able to draft their practices, learn using the materials involved, try out lo fi solutions, develop skill and knowledge, and adapt technologies to their needs. The close engagement with technological infrastructures enables a fluid prototypical living space that can be adjusted to changing needs and life conditions.

We will reveal insights from the project 3000m² House, in which the user engages actively in the design of the home: the concrete foundation, the walls, water installations, electricity supply, heating. Technologies are unsealed, demystified and plied open in this practice-based design research project, to be investigated, queried, prototyped, assembled, and appropriated.

TRACK 15: Responsive and Responsible Technologies

Chair: Finn Olesen

War and PowerPoint presentations: interventions in the military staff organisation

Søren Sjøgren, Royal Danish Defence College and Roskilde University (RUC)

This paper presents how STS concepts can be used to understand organisational work and how the organisation might benefit. The case study is NATO's Multinational Division North (MND N) in Latvia. The primary task of the division is to plan military operations. This is done by translating military doctrine into operational plans. A common doctrine, which can broadly be understood as a set of standards on how to operate, is a central element of multinational interoperability. In NATO, doctrine exists in written manuals. The staff work according to standardised methods of planning laid out broadly in planning doctrine and specified in detail in standard operating procedures. The staff officers understood themselves as rational and analytical. I observed how the staff officers struggled with conceptual and material elements of the network they were part of by paying attention to everyday breakdowns when procedures were tinkered with. I found that historically successful military operations were

deemed inappropriate since they did not fit the staff's imagination of warfare. Other operational ideas were scrapped since they did not fit the PowerPoint template. The intervention presented cases for the staff officers where their tools were clear co-producers of what could be thought and where particular conceptions of doctrine led to specific solutions. The organisation is not rational. Instead, events are interpreted through pre-existing ideas.

Back to basics: disassembling 'the responsibility multiple' in the governance of research

Clare Shelley-Egan, Technical University of Denmark

Michiel Van Oudheusden, KU Leuven

The notion of 'responsibility' in the governance of research has garnered much attention in the last decade or so. Responsible Research and Innovation (RRI) now has a storied history, with a somewhat coherent scholarly community established around it. More recently, responsibility has been applied to new modes of research evaluation, termed as Responsible Research Assessment (RRA). RRA has been described as drawing on broader frameworks for RRI and applying these to the development and application of evaluation, assessment and review processes (Curry et al., 2020). At first glance, a link between RRI and RRA can be made. However, at a second glance, it becomes evident that the connection is neither straightforward nor particularly helpful in configuring new modes of evaluating and assessing research and researchers. For example, as continues to be the case for RRI and its application to research and innovation, it is unclear what 'responsible' evaluation of research in a highly corporatised university landscape might entail. In this talk, we seek to interrogate 'the responsibility multiple' in the governance of research in the contemporary research system. Arguing that RRI and RRA reflect two different kinds of techno-moral regime (cf. Felt, 2016) with different orientations (society-facing and community-facing, respectively), we consider the manifold ways in which responsibility is imagined and coordinated in research. In so doing, we aim to contribute to critical perspectives on reconfiguring research culture to be fit for purpose for far-reaching and complex societal challenges.

Fetishizing Ruptures – sociomaterial and political economic perspectives

Jan Løhmann Stephensen, Associate Professor, Aesthetics & Culture, Aarhus University

Already during the first weeks of covid19 in Denmark, discussions on the potentially positive, disruptive effects of the pandemic emerged. This was particularly evident in relation to the arts and the cultural industries, where various media outlets were brimming with stories and speculation about new innovative ways of reaching, communicating and co-creating with audiences, the invention of new aesthetic forms and genres, etc., some of them even drawing parallels to the emergence of the avant-garde movements in the wake WW1 as well as so-called cultural innovation during previous pandemics like the Plague. Personally, I and other colleagues for instance receive a request from a journalist from a leading national newspaper who was writing a piece about "the ways culture thinks in terms of creative solutions during the pandemic" in relation to which she wondered if I could say something more general about how this historically had been the case during crises.

In extension of this, I will argue that the new conditions that erupted with the covid19-lockdowns was folded back into our social imaginaries about contemporary society being driven not only by an unquenchable thirst for novelty and innovation, but perhaps ultimately by shock and disaster-level creative destruction (Schumpeter, Klein). Yet, looking more specifically at the circuits of cultural production, it was done so in an asymmetrical perspective: on the one hand, with a keen interest in the influence and co-creative agency of the non-human (the virus pandemic, new digital technologies, etc.); whilst on the other hand, completely blind to the infrastructural, and not least: socioeconomic and political, conditions under which culture is produced; in the latter case instead treating it according to the romantically inherited notions of creativity and artistic production as fruitfully overcoming individualized hardships that we know from the myths of Bohemia, the interconnection of madness and genius, the idea of the creative vocation as a calling, etc.

TRACK 16: Civic and Industrial Epistemologies

Chair: Shuang L. Frost

Remaking Entrepreneurial Imaginary of Black Female Tech Founders

Shuang L. Frost, Aarhus University

Yuson Jung, Wayne State University

Marlow Rencher, TechTown Detroit

Dawn Batts, TechTown Detroit

A central challenge in realizing entrepreneurial equality today is that gender and racial minorities still face persisting barriers when starting new firms. In the past decade, all-female founder teams received on average 2% of venture capital in the U.S., and Black female founders, though being the fastest growing segment of entrepreneurs, received a meager 0.06% of tech venture capital funding. This lack of equity has severely handicapped the growth potential of female-led firms and has reinforced pernicious stereotypes about the limitations of female entrepreneurship. As a result of these enduring structural disadvantages, many women, especially Black women, find it difficult to imagine themselves as entrepreneurs or view institutional funding as a viable path to success. Once this imagination becomes collectively held and institutionally stabilized, it turns into a social imaginary— a normative understanding of who ought to be entrepreneurs— that has a persisting influence over various aspects of society.

In this paper, we explore a concerted effort to create an alternative future of Black female tech entrepreneurship that focuses on nurturing high-impact start-ups that seeks to “change the game.” In particular, we draw upon the case study of STEM Entrepreneurial Excellence Program (STEEP), which is built by a team of Detroit-based entrepreneurs and educators to create culturally-relevant, context-sensitive training that could measurably improve the outcomes of female STEM entrepreneurs. On one hand, the founder and designers of STEEP seek to challenge the cultural assumptions of tech entrepreneurship as white male game by encouraging Black females to cultivate authentic entrepreneurial selves that based on their lived experiences. On the other hand, they also distinguish their efforts from most Black Business Schools that follow the philosophy of Du Bois and promote “cooperatives” and “small businesses” among Black entrepreneurs. Instead, STEEP embrace the high-growth high-impact model for startups and turn away applicants whose ambition is limited to create small businesses. We then ask, that how is this particular imaginary being produced at the intersection of Black entrepreneurship and tech entrepreneurship? How does it propose to disrupt and reshape the dominant entrepreneurial imaginary?

Exploring Europeans' relationship with science and technology An empirical typology of scientific engagement

Lucilla Losi, CFA, Department of Political Science, Aarhus University

Literature on Public Engagement with Science is lacking empirical reflections on how people participate in science, especially across socio-cultural levels. Contrary to previous modes of science communication, in Public Understanding of Science the flow of information is intended to be bidirectional, which makes, e.g., science democratization and knowledge co-production realizable goals. In light of these aims, an empirical focus on which people engage in which way seems compelling. Typologies of engagement exist, but have been elaborated as theoretical efforts to, question the existing realizations, or imagine new possibilities. This study aims at expanding this literature by developing an empirical typology of performed science engagement and investigating how socio-demographic characteristics relate to different forms of engagement. I performed Principal Component Analysis and hierarchical Cluster Analysis on data from the Special Eurobarometer 516 in order to observe the modalities in which European citizens participate in science, which I then analyze according to socio-demographic features. The results confirm and expand on previous analyses, but, interestingly, a behavioral distinction between citizen science and other active engagement initiatives does not emerge from the analysis. Furthermore, socio-cultural characteristics seem defining of disengagement and intermediate levels of participation, but not of higher levels of engagement. The paper elaborates on the implications of these results for research and policies on public participation with science, allowing a deeper understanding of the modalities of participation and underlying motivations.

Temporal tensions of dynamic capabilities: The integration of external resources and the implications of assetization for non-profit hybrid organizations

Jane Bjørn Vedel, Copenhagen Business School

Kean Birch, York University

The literature on dynamic capabilities takes assets as givens, leaving the processes through which organizational assets are created and integrated under-explored. In this paper, we argue that the contingent socio-material practices of diverse organizational actors are implicated in the transformation of external resources into organizational assets – defined as a process of *assetization*. Our paper is based on an extensive, qualitative study of large grants awarded to university professors in a northern European context. We show that professors integrate external resources as organizational assets by framing them as assets (e.g., that buy grant holders time, career, and recognition) and by turning them into *organizational* assets (e.g., that provide their organization with new equipment, people, and interorganizational relationships). Following from this, we show that the integration of grants as assets results in temporal tensions, associated with the temporariness, temporal rhythms, and time horizons of these external resources. These findings advance our theoretical understanding of dynamic capabilities by emphasizing the process of assetization and the temporal tensions inherent to the management of large-scale resources. Moreover, they provide a window into the organizational implications of scaled-up resources in higher education.

Referential alignment: Situating knowledges in Innovation Science

Joakim Juhl, Technical University Munich

Despite the heavily institutionalized relation between research and innovation in terms of funding structures, spin-off offices and science parks, there exists relatively little qualitative insight regarding how knowledge is produced and positioned for commercial ends within industrial-academic collaborations. Consequently, there is limited understanding of how to comprehend and guide the content and direction of research in the context of commercial innovation and its practice. Drawing on recent ethnographic studies of collaboration between a large Danish manufacturer of off-highway mobile hydraulics, and a leading Swedish tribology research group, the paper presents these partners' attempts to bring a new environmentally friendly lubricant to market. Our analysis examines how collaborators work towards establishing conditions for transferability between their situated knowledge practices, and we discuss how knowledge practices within technology development can be better understood on basis of feminist epistemologies that are attentive to the situated and contestable nature of knowledge – as opposed to more traditional interpretations of scientific knowledge practices which build on claims of (relative) universality and objectivity. By drawing on concepts from Donna Hathaway, Karen Barad and Nancy Cartwright, the paper develops a situated interpretation of knowledge by which the contingencies of scientific and industrial epistemologies can be analyzed within their practical and reciprocally shaping application. Finally, we propose the term 'referential alignment', to account for the mechanism through which knowledge and technology are made commensurable and transferable in collaborative innovation.

KEYNOTE: Science and the New Constitutionalism

Sheila Jasanoff, Pforzheimer Professor of Science and Technology Studies, Harvard University

