TUM School of Social Science and Technology
Department of Science, Technology and Society
Technical University of Munich

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PhD Colloquium SoSe24 Agenda

Day 1	Thursday, 25.04.2024	Room: 605, Marsstr. 20 (2907.06.605)

Time	Program Item
12:45 - 13:00	**Welcome**
13:00 - 13:15	**Manuel Bruns (1st year)** Title: Examining AI's Role in Addressing the Reading Crisis in Primary Education Moderation: Susanne Koch
13:15 - 13:25	Q & A
13:30 - 13:50	**Manuel Jung (2nd year)** Title: Experimenting for the Mobility Transformation – Living Labs as Technique of Futuring Moderation: Franziska Meinherz
13:50 - 14:00	Q & A
14:00 - 14:20	**Break**
14:25 - 14:45	**Philipp Mehl (2nd year)** Title: Winning hearts and minds for infosec or How to improve information security culture through legal design Moderation: Verena Müller
14:45 - 14:55	Q & A
15:00 - 15:20	**Camilla Tetley (2nd year)** Title: Decision-making and power in African-European research collaborations for sustainability: who decides what, and how? Moderation: Fiona Kinniburgh
15:20 - 15:30	Q & A
15:30 - 15:45	**Break**
15:45 - 16:45	**Closing Keynote: Gabriela Bortz** Title: From access to sovereign science. Peripheral promises and innovation imaginaries in COVID-19 vaccines in Argentina

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Day 2 Friday, 26.04.2024   Room: 607, Marsstr. 20: (2907.06.607)

Time	Program Item
09:30 - 09:45	**Welcome & Check-In**
09:45 - 10:05	**Cindy Rentrop (3rd year)** Title: Inscribing and Performing Visibility: How regional identity is mobilized, constituted and performed through visibility Moderation: Joakim Juhl
10:05 - 10:20	Q & A
10:20 - 11:40	**Coffee Break**
10:45 - 11:05	**Akanksha Bisoyi (3rd year)** Title: The Rule of Law affordances for shaping Blockchain Moderation: David Rebohl
11:05 - 11:20	Q & A
11:25 - 11:45	**Svenja Breuer (3rd year)** Title: Digitalization, AI, and robotics for good care and work? German policy imaginaries of healthcare technologies Moderation: Aysel Sultan
11:45 - 12:00	Q & A
12:00 - 12:45	**Lunch Break**
12:45 - 13:15	**PhD Assembly**
13:15 - 14:00	**Townhall Meeting**
14:00 - 14:20	**Sophia Knopf (3rd year)** Title: Seeing Double - Enactments of Vision and the Production of Power in Digital Urban Twins Moderation: Franziska Meinherz
14:20 - 14:35	Q & A

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14:40 - 15:00	**Nadine Osbild (3rd year)** Title: Cultivating Creativity – the Co-Stabilization of Innovation and Creative Culture in Urban Development Projects Moderation: Franziska Meinherz
15:00 - 15:15	Q & A
15:15 - 15:45	**Coffee Break**
15:45 - 16:05	**Theresa Willem (3rd year)** Title: Embedding Ethics and Social Science in Artificial Intelligence for Healthcare Moderation: Georgia Samaras
16:05 - 16:20	Q & A
16:30 - 17:30	**Closing Keynote: Nina Klimburg-Witjes** Title: Dis/continuities of academic life or: How to enjoy the PhD journey
17:30 - 17:40	**Closing remarks from the organization commitee**
18:15 - open end	**Social event** Place: Café CaVa

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Abstracts

Manuel Bruns (1st year)

Examining AI's Role in Addressing the Reading Crisis in Primary Education

German students' reading skills have been declining over the past two decades. This decline has accelerated since the start of the COVID-19 pandemic. At the same time, the gap between proficient and struggling readers has increased. These developments are problematic, as the ability to read is essential in the 21st century. Students now have to navigate the digital world, often represented in textual form. Before, reading materials were pre-screened by teachers. Now, students must frequently discern what information is accurate and significant.

My dissertation asks if AI-based educational technologies can improve students' reading skills, particularly those who are struggling. It is now clear that AI impacts every part of our lives and that this impact is not deterministically positive or negative. Instead, it will depend on how we use the technology. The dissertation is based on the ""BesserLesen""-project, which aims to utilize AI to improve the reading fluency of primary school students. Central to this project is the development of a mobile application equipped with a speech-matching algorithm. This algorithm listens to students as they read aloud, providing feedback on pronunciation accuracy. But can the reading skills of students be improved this way? How will the students' reading motivation and self-concept be affected? Do the children have sufficient digital skills to handle the new technology? Does the intervention adequately address issues of inequality and data privacy? These are the questions I will aim to answer in my dissertation.

Manuel Jung (2nd year)

Experimenting for the Mobility Transformation – Living Labs as Technique of Futuring

Experimental interventions in urban settings are increasingly employed to drive innovation and socio-technical transformations. One notable instance was the intervention in Munich's Kolumbusstraße, which attracted significant media attention last summer. At the same time, other mobility innovators were preparing for the next test bed with plans to introduce an autonomous vehicle on the road during this year's Oktoberfest. Across numerous European cities, mobility actors are collaboratively testing innovations like automation, electrification, car-reduced neighborhoods, and shared mobility, aiming to advance both technology and societal norms in tandem. However, the question remains: what enduring effects exist beyond the confines of experimental settings?

To understand how these initiatives shape our futures and the associated consequences and politics, I suggest it is helpful to investigate real-world experimentation as a 'technique of futuring' (ToF) (Oomen et al. 2022), examining the social practices that perform experiments as plausible futures.

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In this second-year presentation, I show how living labs, as ToF, render certain futures plausible and more likely than others beyond the confines of experimental projects. My research draws upon interviews, participatory observations, and documents from the mobility research cluster MCube in Munich. Through a series of vignettes of experiments ranging from autonomous driving to street interventions, I shed light on the practices of experimentation.

These vignettes reveal that living labs are considered essential because they allow the public to get in touch with emerging mobility technologies and elicit unforeseen situations. These experiments are set up on a stage, presenting a cohesive world where future technologies are already operational today. Even though the functionality of the presented innovation is often flawed, these experiments employ powerful settings and narratives to make their vision plausible. I argue that experimentation advances aspired futures not merely through open-ended tests and validation but by evoking a sense of neutrality, making particular futures plausible.

Philipp Mehl (2nd year)

Winning hearts and minds for infosec or How to improve information security culture through legal design

The dissertation explores the possibilities of multiple legal design ideas and methods to improve information security culture, while keeping a keen eye on current legal developments in the EU that create design requirements.

Information security legislation is evolving and becoming increasingly complex. As the threat landscape evolves and information security incidents have become daily news – legislators try to get ahead of the curve. Meanwhile organizations struggle to adapt their technology, their people's knowledge and their governance. Additional factors, like the growing lack of subject matter experts and increasing judicial pressure have created a less than desirable environment for affected organizations – resulting in human error being the most important reason for information security incidents, by far.

For a while now, some legal scholars, lawyers, social scientists and lawmakers have turned their attention to design, in an effort to create laws, legal services and legal products that have decidedly been developed with and for humans. An increasing number of positive experiments and experiences led to the thought that bringing together the two human centred concepts of information security culture and legal design could yield interesting results.

Combining literature analysis, expert interviews and an intervention inside an organization – the author plans to paint a comprehensive picture of the possibilities at hand and is trying to test his assumptions in a real-world implementation.

Camilla Tetley (2nd year)

Decision-making and power in African-European research collaborations for sustainability: who decides what, and how?

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How does power manifest in decision-making during processes of collaborative science? How is this negotiated, and why does it matter?

Despite calls from scientists for inter-, trans-, and post-disciplinary science collaborations that can foster solutions for our shared sustainability challenges, 'global science' remains a stage of unequal resource distribution. Research shows such imbalances in academia, including the disparity of scientific recognition and contribution between countries in Africa and Europe, even in joint collaborations. This privilege of certain actors above others has implications for the epistemic diversity scientists call for, towards transformative science. Whilst macro-level challenges – including those related to research funding, authorship and mobility – are well documented, little remains empirically understood about how research collaborations are practiced at the micro-level, and how imbalances play out in collaborative spaces amongst academic actors.

I address these matters in this presentation of my 2nd PhD paper, based on my ethnographic study of six international research collaborations that focus on sustainability, with researchers based in seven countries across Africa and five in Europe. I identify key moments of decision-making, or 'acts of power', during my fieldwork, and analyse how decisions are negotiated, and opened (or closed) for discussion. This analysis enables me to highlight key challenges and patterns related to power in these collaborations, and bring into discussion how power is exercised by collaborators as well as implications for knowledge production."

Keynote Speaker: Gabriela Bortz

From access to sovereign science. Peripheral promises and innovation imaginaries in COVID-19 vaccines in Argentina

Authors:

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This presentation aims to explore how technoscientific promises become fulfilled in a peripheral setting in a health emergency context.

From the pandemic's outset, vaccines emerged as the "holy grail" of the global health crisis, capturing the focus of intensive R&D endeavors. The pursuit of vaccine delivery by major pharmaceutical companies became intertwined in a "speed politics" innovation race. Notably, the design and manufacturing of these vaccines became concentrated in developed or "center" countries, accentuating geopolitical and vaccine distribution disparities between these nations and the "peripheries". Concerns over these imbalances prompted initiatives like COVAX, yielding mixed results and leaving many middle and low-income countries without timely access.

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In developing countries, amidst severe inequalities, the pandemic ushered in a redefinition of the state's role, tensioning its capacity to safeguard its citizens' lives, as well as the role of science -and its historical pledge of contributing to development-, with its capacity to respond in a state of emergency. In this scenario, certain developing nations embarked on homegrown vaccine development and manufacturing, using autonomous R&D capabilities or embracing technology transfer approaches to accelerate vaccine supply.

This paper analyzes the mobilization of techno-scientific promises alongside science and innovation imaginaries related to COVID-19 vaccines in a peripheral context like Argentina. It traces the expectations and strategies employed to ensure vaccine access in the country, and how these expectations of access nurtured greater expectations of sovereignty in terms of health. The study examines the coalitions of actors, and material and symbolic elements that supported an overarching promise of timely vaccination access. It also explores the reassembling of this general pledge into diverse 'COVID-19 vaccine' artifacts, which embedded different attributions of the state's role, and what being a sovereign state means in a peripheral setting.

The work seeks to contribute to a scarcely explored scholarship of techno-scientific promises in peripheral scientific sites diving into the problem of promise fulfillment, in a context of urgency, scarcity and power asymmetries. For that, we explore the symbolic basis of these promises, mobilizing deeply rooted sociotechnical imaginaries on the nation and STI, and its materiality (the artifacts they embed, the coalitions that make them work, the capacities that are sought to build).

This study employs a documentary analysis methodology, drawing on over 150 newspaper articles published from March 2020 to August 2023, legislative acts, and coupled with 32 interviews involving key actors. The analysis centers on the discursive repertoires employed by stakeholders in the national government, health, and scientific-technological sectors, as well as the local biopharmaceutical private sector.

Cindy Rentrop (3rd year)

Inscribing and Performing Visibility: How regional identity is mobilized, constituted and performed through visibility

This presentation investigates how the imperative of innovation and the desire for visibility interweave in the construction and performance of regional identity in three mid-tier dominated European regions. By tracing the scholarly significance of innovation in regional development, I identify and examine the newly emerging category of visibility that shapes regional identities and trajectories through infiltrating regional innovation cultures. This new analytic category revolves not only around innovation but also the socioeconomic order and sociocultural practices and norms, inscribing itself in regional identity. Mainly informed by the critical scholarship of innovation studies, the presentation examines the multifaceted dimensions in which regional identity is constructed and performed through and around the category of visibility. I trace the notions of visibility in the political culture and governance structures, the socioeconomic order, and sociocultural dynamics. Regional innovation culture is to be understood as the fundamental gateway for visibility to transform and perform regional identity. Therefore, I critically address the following questions: What are the root causes inherent for regions to desire and inscribe visibility? How is regional visibility imagined and

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produced? How is regional identity mobilized, constituted, and performed through visibility? These questions shed light on the multifaceted nature of visibility as they look at ignored power dynamics in processes of regional identity formation and social struggles.

Akanksha Bisoy (3rd year)

The Rule of Law affordances for shaping Blockchain

As blockchain technology is increasingly used for public services like procurement, identification management, humanitarian aid as well as protecting vulnerable populations, it must adhere to the principles of the rule of law. This is crucial since the code embedded in blockchain has an enormous impact on our lives, potentially shaping people's behaviour in a democracy. This is why any normative implications resulting from the use of this technology must be within the bounds of the rule of law. Essentially, the legitimacy of code rules governing human behaviour and the enforcement of these rules is of utmost importance. Given the unparalleled efficiency of code in 'mindlessly' executing rules, those responsible for developing blockchain technology ('the figure') must be obligated to adhere to ex-ante and ex-post rule of law standards that guarantee legitimacy and allow for contestability, similar to the responsibilities placed on the public legislators. Since the code embedded within the technology is the manifestation of the intentions of the 'figure', and such intention can either be to foster the rule of law or circumvent it. Thus, this PhD Project investigates the question: can the rule of law shape, guide and influence the design and implementation of blockchain technology in a legitimate manner? This question pertains to design and, consequently, to the production of blockchain technology.

By engaging with the theoretical perspectives of the rule of law with the relational theories of design, in my third-year talk, I will map out the rule of law affordances against the crypto-legalistic characteristics of the code embedded in the blockchain that would be useful to assess and guide the development process so that the technological artifact is within the perimeter of the rule of law. These affordances provide opportunities to enquire about the features provisioned in a particular design of a technology. Further, I will highlight that these affordances offer a set of aspirational objectives for the affordances themselves so as to attain legitimacy and desired efficacy. The employment of the affordance theory as a conceptual lens for what code ought to do and not just to describe what it does provides an unorthodox modus operandi to recognise and relate novel varieties of interaction that ought "to promote the benefits of legality (the rule of law) and to prevent the disadvantages of legalism (the rule by law)".

Svenja Breuer (3rd year)

Digitalization, AI, and robotics for good care and work? German policy imaginaries of healthcare technologies

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In my doctorate, I trace imaginaries of healthcare AI and robotics through engineering practice and public policy. Last year, I presented a study on how engineer's practices are being shaped by the their understandings of the social contexts they develop robots for – healthcare in my case study. This year, I will present on an analysis of German public policy documents on healthcare technology.

Healthcare is being discussed as an increasingly important application domain for new digital, AI-enabled, and robotic technologies. This area has garnered interest by policymakers who seek to harness technological advancements in their quest for providing adequate healthcare to ageing populations and modernizing healthcare jobs. I analyze the sociotechnical imaginary of healthcare technology constructed in German public policy. I analyze 22 pertinent German policy documents from the years of 2018-2022, drawing on a conceptual frame of sociotechnical imaginaries (Jasanoff and Kim 2015) and dramaturgical studies of futuring (Oomen et al. 2022). My analysis shows how healthcare is imagined as a sector in crisis, how technology is promoted as a solution, and how anticipated resistances to technological solutions are being met with the narratives of 'technological assistance', the provision of 'good care', and the facilitation of 'good work' within the healthcare sector.

Sophia Knopf (3rd year)

Seeing Double - Enactments of Vision and the Production of Power in Digital Urban Twins

The future of cities is often discussed in terms of managing distinctly urban challenges. Against this backdrop, one of the latest iterations of urban innovation is the development and use of a 'Digital Urban Twin' (DUT) – often described as a dynamic virtual re-creation of a city.

DUTs have been contextualized as unprecedented, data-driven ways to know and act upon cities. From that perspective, my research takes DUTs as empirical entry point to investigate how knowledge is created through a city's efforts to make a DUT and how legitimacy is created around the representation and experience of this knowledge as a central mechanism for the governability of cities.

Based on empirical research on DUT projects in Munich, Singapore, Boston, Seoul and Tallinn I argue that that the phenomenon of DUTs does not primarily mark a shift towards technocratic governance, as is part of its own promissory discourse and often criticized by STS. Working in the idiom of co-production and grounded theory, and conceptually linking work on the politics of technologically mediated visualization and work on the public performance of knowledge, I argue that DUTs provide a collective orientation towards a common, desired vision, thereby reframing notions of (scientific) expertise and legitimacy.

Through this shared frame of reference, actors are not only trying to break down barriers in data and infrastructure, but also in knowledge and understanding. The main aim is not to provide quantified, objective knowledge - ""speaking truth to power"" - but to embed urban knowledge in a collective frame of reference. The legitimacy is not primarily derived from an objectivity based on the scientific method, but from the impression that others potentially and literally "see" the

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same thing. The digital twin plays an important role here through its platformization and visualization functions. This has important implications for questions of democratic decision-making and the ability of different actors to shape urban futures.

Nadine Osbild (3rd year)

Cultivating Creativity – the Co-Stabilization of Innovation and Creative Culture in Urban Development Projects

EIT Culture & Creativity, the New European Bauhaus initiative, "Initiative Kultur- und Kreativwirtschaft" – culture and creativity are at the center of recent (supra-)national & regional development strategies, promising economically successful and socially equitable futures. On the level of urban transformation, this trend oftentimes translates to creative districts which shall envision more democratic, sustainable, and inclusive ways of urban life by marrying technological innovation and creative (sub)cultures in one space. I build on the research of regional innovation cultures and feminist STS to investigate the city-specific co-stabilization of innovation and creative culture alongside respective urban futures in creative district case studies in Munich and Bristol. In Munich, creative districts are enforced by a rather strong state as a development strategy that expresses wealth and seemingly satisfies the public longing for hipness and unruliness, while actually reigning in 'unruly' actors and stabilizing creativity as a tool for productivity. In Bristol, the project care rests solemnly on the shoulders of individual creatives and public volunteers trying to fill the responsibility vacuum of a rather weak local governance. The fluid understanding of material-discursive innovation and the idea of creativity to question prevalent living and working realities hereby fails due to clashing market-driven state and developer logics. This comparison allows me to address the problem of institutional readability: What urban governance can process as worthwhile 'creative output' glorifies technological innovation while side-lining urban transformation eVorts rooted in the reform of socioeconomic structures. Analyzing mechanisms of control and cruel optimism, I describe the paradox eVect of creative districts as silently reconfiguring the value of art and creative culture in urban future-making based on corporate norms. I ultimately argue against creative districts as systemically detached eVorts of transformation, and a dualistic and heteronormative approach of technological change and creative (sub)culture herein.

Theresa Willem (3rd year)

Embedding Ethics and Social Science in Artificial Intelligence for Healthcare

Artificial intelligence has become a fast-growing research domain, particularly in healthcare, where the artificially intelligent support of medical decisions holds the prospect of bettering patient care. Together with the high hopes, however, came a host of ethical and societal issues, and current mitigation strategies are lagging behind. Building on data from a three-year-long BMG-funded project, my dissertation investigates the ethical and social implications of imaging AI research and development and the underlying causes favoring their emergence. My cumulative thesis centers on three research articles:

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- Willem, T., Krammer, S., Böhm, A. S., French, L. E., Hartmann, D., Lasser, T., & Buyx, A. (2022). Risks and benefits of dermatological machine learning health care applications—an overview and ethical analysis. Journal of the European Academy of Dermatology and Venereology, 36(9), 1660-1668.
- Willem, T., Wollek, A., Cheslerean-Boghiu, T., Kenney, M., Buyx, A. Exploring the Social Context Dependency of Metadata Categories: A Quantitative and Qualitative Analysis of a Brazilian Dermatological Dataset. Under review at FAccT conference 2024.
- Willem, T., Müller, R., Buyx A.. Suspended Responsibility. How agential, temporal, and local shifts suspend responsibility for medical decisions supported by machine learning. Under review at Big Data and Society.

Taking the findings from all articles into account, my thesis illuminates the limitations of state-of-the-art mitigation strategies and concludes by suggesting room for maneuvering we, as social scientists and empirical bioethicists, have to support moving toward a more equitable and benevolent future in healthcare.

Keynote Speaker: Nina Klimburg-Witjes, STS Dep. University of Vienna

Dis/continuities of academic life or: How to enjoy the PhD journey

How to get started with a PhD project? How to find your topic and stay true to your interests and values through the highs and lows of independent research? How do you find your own voice as a scholar? And, perhaps most importantly, how to make sure you enjoy the PhD journey despite the challenges of today´s academic system?

My talk will not provide straightforward answers to these questions but will offer a reflexive and personal journey through the dis/continuities of academic life. Drawing on some of my research projects and experiences from early Ph.D. to professorship—from fieldwork encounters with security actors to publication strategies, grant writing, and forms of collaboration— I will provide a behind-the-scenes view of research and career trajectories (constantly) in the making.

The second part of my talk will introduce the ERC-funded research project "FutureSpace – Negotiating Relations between European Integration and Europe´s Future in Outer Space" and present interests, themes, and experiences from our ongoing research. The project explores the coproduction of envisioned space futures and techno-political orders on Earth. Using the joint European Ariane launcher as a case study, we explore how the politics of the present are shaped by how the future of space is envisioned and vice versa. To do so, we develop a multi-sited, interdisciplinary ethnography that pays symmetrical attention to the material and imaginative aspects of space infrastructures in transformation.

Link project website: https://futurespace-project.eu