Workshop: Digital Capitalism & Varieties of Science

Co-Organizers: Käte Hamburger Kolleg: Cultures of Research (RWTH Aachen), German Institute for Japanese Studies (DIJ) Tokyo

Convenors: Stefan Böschen, Harald Kümmerle, Nicole Müller

Date: March 12 & 13, 2026

Location: German Institute for Japanese Studies (DIJ), Tokyo

The Sessions on Day One ("Digital Technology in Context") will be livestreamed for a public online audience. Please register via: maxweberstiftung.zoom-x.de/webinar/register/WN_dKDVTS-VS5agd0_ea9wzaA.

The Sessions on Day Two will not be open to the public.

In recent years, digital technologies have not only given rise to new sociocultural realities, thus reshaping economies, but have begun to profoundly alter the ways in which knowledge is produced, validated, and disseminated. Against this backdrop, this workshop explores the intersection of varieties of science and varieties of digital capitalism through a comparative and interdisciplinary lens. Starting from specific digital technologies – particularly the metaverse, extended reality, and human augmentation – we examine distinct institutional, cultural, and epistemic configurations.

Our focus lies especially on Japan, which has been characterized as a coordinated market economy alongside Germany. The workshop adopts an approach that investigates how science and capitalism co-evolve under conditions of digital transformation – understood here as a topic for critical inquiry (following Stolterman and Croon Fors 2004). Moving beyond modernization theory, we ask how digital tools and platforms take shape across a range of socio-political contexts, and how they in turn affect knowledge regimes and research practices.

By bringing together perspectives from STS, economics, and Japanese studies, along with insights from practice, the workshop seeks to open up a productive dialogue on how emerging technologies, digital capitalism, and scientific cultures co-constitute one another – across regions, disciplines, and epistemic traditions. We hold that the case of Japan, the first non-Western country to become an advanced economy and fertile spawning ground for technoscientific imaginations and attributions, offers particularly valuable insights into these processes.

The workshop is structured around three thematic spaces of exploration:

Exploration Space 1: Digital Technology in Context

Offering insights and starting points for exploring the forms and dynamics of how digital technologies do not only evolve technologically, but form specific socio-technical arrangements, and align artefacts, actors and practices.

Paul Roquet (MIT)

Title/Abstract: Contrasts of Computation: Japan in 3DCG

What might a history of computer graphics look like if we reject the simulation of reality as their teleological endpoint, and focus instead on where 3D computing departs from everyday spatial experience? Drawing inspiration from Japanese media industries' adoption of 3D graphics moving into the new millennium, this talk highlights an emergent trajectory distinct from the photorealistic imperative that dominates computational imaging today. Rather than push for the immediate integration of computers into lived experience, I show how media creators and media artists in Japan are instead exploring the divergent physicality of computer-generated spaces, tracking where 3DCG departs from more directly embodied forms of expression. What results, I argue, is not so much a "mixed reality" as a practice of indexical montage, compositing together the algorithmic, the photographic, and the hand-drawn and drawing out the critical differences and divergent possibilities that lie between them. In turn, I explore how this composited approach to computational practice offers a critical alternative to the creeping enclosure of everyday life by corporate digital surveillance, and a way to reenvision what it means to take up space in our current era of algorithmic power.

Short Bio: Paul Roquet is associate professor of media studies and Japan studies at the Massachusetts Institute of Technology, in the Comparative Media Studies/Writing section. He is the author of Ambient Media: Japanese Atmospheres of Self (Minnesota, 2016) and The Immersive Enclosure: Virtual Reality in Japan (Columbia, 2022), along with other writing on experimental animation, environmental aesthetics, and the cultural politics of mediated perception. For further details see proquet.mit.edu

Kiyoshi Kiyokawa (NAIST Nara)

Title/Abstract: XR Technologies for Social Inclusion

This talk explores the future of Extended Reality (XR) as a transformative tool for social inclusion and human well-being. Moving beyond entertainment, I propose a vision of "Cybernetic Reality," where human-computer integration acts as a bridge to guide us toward a more connected and fulfilled state. I will introduce cutting-edge research on self-transformation – the ability to "wear a new reality" – demonstrating how this technology allows us to overcome physical or social barriers, cultivate empathy, and expand our capabilities. Furthermore, I will discuss how perceptual manipulation via AR can democratize access to a healthier lifestyle. The presentation concludes with a future where XR does not help us escape reality, but redesigns it to foster equity, unlocking the potential for diverse individuals to thrive together.

Short Bio: Kiyoshi Kiyokawa is a Professor at the Nara Institute of Science and Technology (NAIST), where he leads the Cybernetics and Reality Engineering (CARE) Laboratory. A distinguished researcher in VR, AR, human augmentation, and assistive interfaces, he is particularly known for pioneering advanced head mounted displays. His contributions have been recognized with the 2022 IEEE VGTC VR Technical Achievement and Service Awards and the VRSJ Fellowship. He has served in extensive leadership roles, including as General Co-Chair for IEEE VR 2019 and as a Steering Committee member for IEEE VR and ISMAR.

Jan-Hendrik Passoth (Viadrina Frankfurt / Oder)
Title/Abstract: Multiple Interoperabilities: Making Data Work in German, Ukrainian, and South African Administration

Interoperability has become a central imperative in digital government: databases should communicate seamlessly; data should flow across administrative levels and borders. Yet this promise consistently encounters friction. Data formats differ, legacy systems resist integration, legal frameworks conflict with technical requirements. And every attempt to make things compatible seems to produce new incompatibilities elsewhere. This contribution looks at how three administrations make interoperability happen in practice.

In Germany's federal system, sixteen states maintain registers with different data models, more than 200 municipalities are responsible for the heavy lifting of digital transformation work. Making these compatible means building translation devices that constantly negotiate between standards and ontologies - who counts as citizen, what constitutes valid status, when someone is the same person. Ukraine's Diia platform pursues a different strategy: eliminate multiplicity through centralization. One API architecture, standardized data practices, one way to be a digital citizen. Developed under wartime conditions, this approach rapidly consolidates administrative plurality into singular digital presence. But multiplicity does not disappear, it reappears while aligning with EU accession requirements. South Africa's Gov Stack initiatives enact yet another interoperability. International donors, government departments, and vendors collaborate to establish data standards and build capacity. International specifications meet local practices. Technical infrastructure becomes a site where development politics unfolds – whose categories prevail, whose work becomes visible, whose ontologies travel. These are not implementations of interoperability, these are different interoperabilities in digital public administration initiatives, enacting varieties of administrative realities and political responsibilities. Following how each site makes data compatible - through which devices, doing what work, with what effects - shows that digital government is not so much about technical infrastructure, but about ontological politics in digital statecraft.

Short Bio: Jan-Hendrik Passoth is Professor for Sociology of Technology and Director of the European New School of Digital Studies at European University Viadrina, Frankfurt (Oder), where he also serves as Vice-President of Research and Career Development. He is a board member of the German Society for Science and Technology Studies (GWTF). His research focuses on digital infrastructures, public service technologies, and the materiality of digital practices.

Digital Technology in Context: Practitioners I

Taiyō Fujii (Practitioner, SF Autor)

Title: Development of Japanese SF and Its Contribution to Society

Short Bio: Taiyō Fujii, originally from Amami Oshima, has worked in stage design, desktop publishing, exhibition graphics, and software development. In 2012 he self-published Gene Mapper, becoming Amazon.co.jp's top Kindle title; a revised Hayakawa edition (2013) earned Nihon SF Taisho and Seiun nominations. Orbital Cloud won both major SF awards in 2014. Hello, World! won the Yoshikawa Eiji Prize for Young Writers. Fujii served as the 18th chair of the SF Writers Association (SFWJ), reorganizing it as a company and founding its board. Recently he's active in SF Prototyping and ongoing international short-story collaborations, earning multiple Seiun Awards.

Yoshitomo Iwamoto (Practitioner, Lenovo Japan)

Title: Industrial XR: From Device-Centric Tools to Platform-Oriented Infrastructures

Short Bio: Yoshitomo Iwamoto is an AR/VR sales and business development specialist based in Kanagawa, Japan, with over 15 years of experience in immersive technologies and visual communication. He currently leads AR/VR business development for Lenovo Japan, driving product launches, partner ecosystems, and end-user adoption. Previously, he managed mixed reality content and UX at HoloLab and helped pioneer HoloLens and cloud rendering solutions that earned multiple Microsoft Japan Partner of the Year awards. He holds a Bachelor of Fine Arts in Studio Arts – Visual Communications from the University of Arizona.

Yuka Sogawa (Practitioner, MLIT/Project Plateau)

Title: Project PLATEAU: Japan's Urban Digital Twin Initiative

Short Bio: Yuka SOGAWA is Director of Project PLATEAU from the Japanese Ministry for Land, Infrastructure, Transport and Tourism (MLIT), which promotes the development and utilization of urban digital twins as open data. After entering MLIT in 2017, she was involved in policymaking related to transportation business and inbound tourism attraction. She obtained a master's degree in public policy from Columbia University in 2024. Through directing Project PLATEAU, she contributes to providing an infrastructure onto which cities, science and industry can develop new ideas on how to harness the power of urban digital twins – from urban planning to improving emergency response.

Digital Technology in Context: Practitioners II

To be announced: Practitioner from XREAL (leading developer of consumer augmented reality hardware)

Exploration Space 2: Varieties of Digital Capitalism

Analyzing the institutional foundations and normative orientations of digital economies, with attention to governance models, data regimes, and value creation logics.

Harald Kümmerle (DIJ Tokyo)

Title/Abstract: Japan's Consensual Variety of Digital Capitalism and the Co-Constitution of Science

The Varieties of Capitalism framework (Hall and Soskice 2001) offers a powerful lens for understanding how institutional configurations shape economic coordination across national contexts. Its application to the digital sphere has produced competing typologies: Bradford (2023) distinguishes market-driven (US), state-driven (Chinese), and rights-driven (EU) approaches, while Schmalz (2024) reduces the field to a US–Chinese bipolarity, treating other economies as dependent varieties. This contribution argues that both accounts underestimate Japan, which constitutes a distinct consensus-driven variety of digital capitalism (Haley 1991; Kümmerle and Waldenberger 2024), characterized by soft regulation, multi-stakeholder involvement, and consensus orientation in its domestic and international data governance schemes. The contribution then takes a further step: if digital capitalism varies institutionally, its regulatory configurations also entail distinct modes of datafication and orders of worth (Boltanski and Thévenot 2006) – and thereby shape how scientific knowledge is produced and mobilized for policy. Japan's COVID-19 response provides a compelling case for this claim. The Japanese response stabilized a cluster-oriented trajectory that combined context-sensitive spatial simulation on the Fugaku supercomputer – a flagship project embedded in Japan's Society 5.0 strategy – with decentralized decision-making at the municipal level, while allowing for pragmatic adjustments along the way (Kümmerle and Thumfart 2025). Visualization of simulation results served as a shared reference point for public communication and behavioral guidance, with implementation relying largely on voluntary self-restraint rather than legal coercion. The case demonstrates that varieties of digital capitalism co-constitute varieties of science – not as a matter of grand epistemology, but through the concrete regulatory practices that shape how data are generated, interpreted, and acted upon.

Short Bio: Harald Kümmerle (Dr. phil., M.Sc.) is Principal Researcher at the German Institute for Japanese Studies (DIJ) in Tokyo, where he leads the Knowledge Lab

dedicated to studying knowledge production and knowledge infrastructures. His research interests include the history of mathematics, new materialism, digital humanities, and critical data studies. His dissertation on the “Institutionalization of mathematics as a science in Meiji- and Taisho-Era Japan” won the 2020 Johannes Zilkens Prize of the German Academic Scholarship Foundation and the 2023 Kuwahara Prize of the Japanese Society for the History of Mathematics.

Jan-Felix Schrape (University of Stuttgart)

Title/Abstract: Varieties of Platform Capitalism

This contribution examines how socio-economic adoption, usage, and regulation of digital platforms – ranging from social media platforms to market, service, and labor platforms – differ between (quasi-)coordinated market economies, such as Germany and Japan, and (quasi-)liberal market economies, including the USA and the UK. It explores the role of digital platforms and ecosystems, along with their underlying value creation logics and data regimes, in reshaping economic conditions and reconfiguring innovation dynamics, and investigates how these changes interact with the existing institutional structures, patterns of knowledge dissemination, communicative exchange processes, and cultural practices prevalent in the respective regions. The comparative considerations aim to illustrate that, although only a handful of platform operating companies command a substantial portion of the global market, particularly in terms of market capitalization, the diversity of market competition and (trans-)national regulatory frameworks gives rise to varied platform models across different regions, as well as it fosters idiosyncratic socio-cultural appropriation processes, which introduce context-specific regulatory challenges in practice. Consequently, examining these differences and variations is not merely an academic endeavor; it offers valuable opportunities for mutual learning across various socio-economic contexts.

Short Bio: Jan-Felix Schrape is associate professor at the Institute for Social Sciences at the University of Stuttgart, Germany. His research focuses on the sociology of technology, media, and innovation. Since 2018, he has served on the board of the Science and Technology Studies section of the German Sociological Association.

Martin Schröder (Ritsumeikan University, Osaka)

Title/Abstract: Digital and Green Transformations of Japan’s automotive industry and implications of its Variety of Capitalism

This paper will investigate the ongoing digital transformation of the Japanese automotive industry with comparative reference to Germany. The automotive industry is going through a dual transformation, i.e. the digital and green transformations. While the latter is mainly addressing the product, the former is addressing both the product and its production process. This investigation will briefly discuss the product because its transformation has implications for the production process and even

more importantly for the production workers. The main focus will be on the production process and the implications for Japan's variety of (digital) capitalism. While the automotive industry provides strong signs that Japanese capitalism remains coordinated, e.g. through the (intransparent) redefinition of job profiles and related qualifications conducted by carmakers and their company unions or the creation of data ecosystems promoted through industry associations, it also is evident that increased digital automation is used by some firms to reduce employment and to increase surveillance of workers. Furthermore, it will be asked if the promotion of data ecosystems should be understood as a strategy to avoid dependence on foreign digital platforms and services.

Short Bio: Martin Schröder is Associate Professor at the College of Policy Science, Ritsumeikan University, Japan and Visiting Researcher at the Research Institute of Automobile and Parts Industries, Waseda University, Japan. His research interests are regional economic integration in ASEAN, the political economy of the automotive industry, and digitalisation in the automotive industry.

Exploration Space 3: Varieties of Science

Aiming at exploring whether and how there are different cultural-institutional logics of embedding the production of scientific knowledge in respective countries or regions, in our case: Japan and Germany, which are similar to some extent (coordinated capitalism), but obviously different with regard to other aspects.

Ryuma Shineha (Keio University, Tokyo)

Title/abstract: Responsible Innovation in the digital and cybernetic age

Current advances of science and technology has brought interests in ethical, legal, and social implications (ELSI) concerning emerging science and technology. Recently, these discussions have been examined under the concept of "responsible research and innovation (RRI)." This presentation will try to focus on RRI in the digital era and emerging technologies such as cybernetics. A cybernetic avatar (CA) is a concept that encompasses not only avatars representing virtual bodies in cyberspace but also ICT and robotic technologies that enhance the physical, cognitive, and perceptual capabilities of humans. CAs can enable multiple people to remotely operate numerous avatars and robots together to perform complex tasks on a large scale and create the necessary infrastructure for their operation and other related activities. However, due to the novelty of this concept, ELSI of CAs have not been discussed sufficiently. Therefore, the objective of this paper is to provide an overview of ELSI in the context of a CA, taking into account the implications from fields similar to that of CAs, such as robotic avatars, virtual avatars, metaverses, virtual reality, extended reality, social robots, human–robot interaction, telepresence, exoskeletons, etc. We found common themes: safety and security, data privacy, identity theft and identity loss, manipulation, intellectual property management, user addiction and

overdependence, cyber abuse, risk management in a specific domain (e.g., medical applications), regulatory gaps, balance between free expression and harmful content, accountability, transparency, distributive justice, prevention of inequalities, dual use, and conceptual changes of familiarity. These issues should not be ignored when considering the social implementation of CAs.

Short Bio: Ryuma Shineha is an associate professor at Graduate School of Media Design, Keio University. His major is Science and Technology Studies (STS) and Science and Technology Policy Studies. He received a BSc in Agriculture from Kyoto University in 2006, and then a Ph.D. from Kyoto University in 2011. His current research theme is analyzing social and ethical aspects and broad impacts of science and technology with perspectives on responsible research and innovation (RRI) and co-creating real-time public dialogue in RRI agendas among various actors, particularly focusing on emerging biotechnology such as stem cell science, genome editing, brain science, synthetic biology, etc. He also considers structural issues of science and technology policies. He is a vice-chair of the Young Academy Science Council of Japan (SCJ).

Jeanette Hofmann (WZB, Berlin)

Title/abstract: Varieties of digitalisation research

While Europe and Germany are clearly on the periphery of industrial digital research, social sciences and legal research on digitalisation have followed a distinct path. European social sciences have responded to digital change by establishing new research institutes and fields (e.g. information law, social media and disinformation studies, platform governance) and by developing innovative research methods. In Germany, several interdisciplinary, thematically overlapping research institutes have been founded over the past decade with a focus on social challenges posed by digitalisation. It is noteworthy that, unlike in other EU states, Germany has invested a considerable amount of public funding in institutionalising digitisation research. Studies of the various agendas show no categorical differences between publicly and privately funded research, however.

Computational social sciences have ushered in a new wave of quantification in social research, with tangible effects on overarching questions and the scope of empirical inquiry. Among early-career researchers, data-driven methods appear to be gaining a hegemonic position. Access to data, however, remains precarious also for academia, since even legally guaranteed claims against the IT industry are not enforceable in practice. A problem of this growing interdisciplinary focus on quantitative methods is its weak epistemic autonomy from the discursive power of the IT industry and its scant connection to the theoretical traditions of the respective disciplines.

Short Bio: Jeanette Hofmann is head of the research group "politics of digitalisation" at the Berlin Social Science Center, she is research director of the Alexander von Humboldt Institute for Internet and Society and principal investigator at the Weizenbaum Institute for networked society and professor of Internet politics at Freie Universität Berlin. Her research focus is on digitalisation and democracy.

Co-Organizer, Stefan Böschen

Short Bio: Böschen, Stefan, Dr. phil. Dipl.-Ing. Professor for Society and Technology at the Human Technology Center (HumTec) RWTH Aachen University. Spokesperson of HumTec and Co-Director of the Käte Hamburger Kolleg “Cultures of Research”. Member of acatech – National Academy of Science and Engineering. Member of the working-group “interdisciplinary science studies” at Leopoldina – Nationale Akademie der Wissenschaften. His research focus is on Science Technology Studies and the present-day challenges within a changing world, e.g. the Varieties of Science-Approach is one outcome.

Co-Organizer, Nicole M. Mueller

Short Bio: Nicole Marion Mueller (Dr. phil.) is a Senior Research Fellow at the German Institute for Japanese Studies (DIJ) in Tokyo. Her research focuses on the intersections between culture (particularly literary fiction), technology, and society in modern and contemporary Japan.

Her first book, a digital humanities analysis on the interplay between historical context and 20th century literary translation into Japanese, has been published in 2024. Currently, while editing a special issue on the topic of Japanese Technofutures, she is working on a second monograph on Japan’s sociotechnical imaginaries of the metaverse.