



# Society for Social Studies of Science

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### Session Title

The Domains of Data Science: Science, Industry & State

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### Abstract

Data science has received a remarkably rapid uptake across the organizations of industry, the halls of the academy and the institutions of nation states. More than a "siloed" uptake, a characteristic of data science appears to be an indifference or agnosticism to traditional boundaries between those domains; even actively seeking to transcend those boundaries through "domain independent" analytic tools or by fostering new data sharing pathways. This panel draws together scholars examining the rollout of data science in European, American and Asian contexts with a dual focus on commonalities and divergences national and transnational policies, and computational technologies and capacities.

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### Area of STS Scholarship

[Edit Area of STS Scholarship](#)

Information, Computing and Media Technology

Engineering and Infrastructure

Governance and Public Policy

### Keywords

[Edit Keywords](#)

data science, infrastructure, policy

### Additional Information

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Should not be scheduled at the same time as the 'critical data studies' open panel session, please!

### Participants

[Edit Participants](#)

David Ribes, dribes@gmail.com; University of Washington (**Session Organizer**)

Geoffrey C. Bowker, gbowker@uci.edu; University of California, Irvine (**Chair**)

### The logic of "domains" in data science

#### Title (Paper Abstract)

The logic of "domains" in data science

[Edit Title](#)

#### Author

David Ribes, dribes@gmail.com; University of Washington (**Presenter**)

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#### Abstract

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"Domain" is an actor's category, long in use within computer and information sciences, and now data science. The term is used to demarcate disciplinary differences so as to enact their overcoming. This presentation will characterize the logic of domain thinking.

Domain boundaries can be enacted at any scale: fields, disciplines, subfields, labs and even individuals. Industry, science and state too are cast as domains. Domain difference can be characterized across the sociotechnical spectrum: domains may be said to have different file formats or data collection methods, but also, epistemologies, languages or cultures. Ultimately, domain boundaries are identified to be superceded: whether cultural, epistemological, or technical, the work of enacting boundaries is coupled with a vast emerging armamentarium of tools and techniques to engineer domain crossings.

Put briefly, identifying and overcoming domain boundaries is a core operating logic for data science, a distinct reformulation of the classic 'problem of multidisciplinarity.'

### Individual Submission

Paper Abstract

## Building the core

### Title (Paper Abstract)

Building the core

[Edit Title](#)

### Author

Robin Williams, r.williams@ed.ac.uk; The University of Edinburgh (**Presenter**)

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### Abstract

The informatisation of research calls for close interaction between scholars from different disciplinary roots. However tensions may arise where the research goals of one discipline threatens to become subordinated, reduced to a service role, to another (Barry 2008).[1] This paper explores the dilemmas surrounding the UK's national institute for data science, The Alan Turing Institute (ATI) formed in 2015 by the top 5 universities in this field. Though its goals included translational research that would advance data science through its application, in collaboration with external stakeholders, the ATI distinguished its role from sector-based institutes by prioritising foundational research advances in core areas such as statistics, modelling and machine learning. Though the future trajectory and achievements of the ATI are still yet to be established, discipline-based boundaries and knowledge hierarchies threaten to resurface. [1] Barry, A et al (2008) 'Logics of interdisciplinarity', *Economy and Society*, 37: 1, 20 — 49

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## Individual Submission

### Paper Abstract

## The enduring spell of tacit knowing? : Data science and its discontents in the managerial and policy landscape of Japan

### Title (Paper Abstract)

The enduring spell of tacit knowing? : Data science and its discontents in the managerial and policy landscape of Japan

[Edit Title](#)

### Author

Masato Fukushima, maxiomjp@yahoo.co.jp; University of Tokyo (**Presenter**)

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### Abstract

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Since scientific practice is understood as being deeply influenced by its specific genius loci (Livingstone 2003), the recent global development of data science may be an intriguing case of understanding how such a seemingly universal flow of data is related to a particular locality with a specific understanding of data, or even knowledge. A part of Japan's rather poor development of data science—currently a hot topic within academia, industry, and even policy circles—may have resulted from our favored understanding of knowledge that is fundamentally rooted in our body. This view has been popularized extensively by "The Knowledge-Creating Company" of Nonaka & Taeuchi (1995), with its so-called SECI model of innovation process based on the spiral interface between tacit and explicit knowledge. This book has not only made the term anmoku-chi (tacit knowledge) almost coterminous with innovation itself but also endorsed the creed that mono-tsukuri—roughly translated as craftsmanship/manufacturing—is our nation's industrial identity.

However, the rapid rise of data science, where data largely refer to digital records of any type, has been a challenge to such a widely shared assumption. Drawing on the observation of a couple of different settings where such conflicting views of knowledge actually matter, I discuss the meaning of location vis-à-vis the current development of data science in the dual sense of the word, that is, the very socio-technical location that matters in this development and the very understanding of knowledge in relation to its locality and universality.

## Individual Submission

### Paper Abstract

## The Institution of Data Science in BDHubs: Distributing and Relocating Knowledge Production Between Industry, Government and the Academy

### Title (Paper Abstract)

The Institution of Data Science in BDHubs: Distributing and Relocating Knowledge Production Between Industry, Government and the Academy

[Edit Title](#)

### Author

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Stephen Slota, steveslota@gmail.com; (**Presenter**)

### Abstract

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The Big Data Innovation Hubs and Spokes (BDHubs) project is an NSF-funded organization with ambitions to become an 'umbrella organization' supporting cross-sectoral collaboration, capacity-building and the sharing of expertise between academic, industry and governmental stakeholders in the data sciences. Unlike in other areas of scientific inquiry, data scientists often have little control over the metadata, software format and even the content of their data sets. This results in a mode of scientific inquiry where particular scientific, social and policy outcomes of research are malleable and responsive to emerging understandings both of how particular large data sets might be interpreted and the advancement of the tools and methods available to the data scientists and professionals working on them. The nature of data scientific work is often intentionally neutral with respect to specific scientific outcomes compared to the goal of extracting knowledge (and understanding what can potentially be learned) from very large, heterogeneous data sets. Big data is a data first endeavor, and the advancement and acceleration of data science under BDHubs revolves closely around expanding data interoperability, sharing tools, resources and methods between data scientists and professionals, and furthering a general understanding of the

capacity of those tools, resources and methods to make sense of very large data sets. Novel data science raises questions of epistemology, reconsiders core scientific norms like reproducibility and interoperability, and presents new and emergent objects of study in the algorithms, tools and models that mediate between data and the scientists working to interpret it.

## Individual Submission

Paper Abstract

### Data Science Institutes in the Netherlands

#### Title (*Paper Abstract*)

Data Science Institutes in the Netherlands

[Edit Title](#)

#### Author

Sally Wyatt, sally.wyatt@huygens.knaw.nl; Royal Netherlands Academy (**Presenter**)

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#### Abstract

Dutch universities have a long history of collaborating together even though this tradition has been undermined since the turn of the century, for example via increased competition for research funding and the legal removal of democratic governance (Halfman & Radder, 2015). The recent emergence of data science can be seen as a return to inter-university collaboration. In this presentation I will examine two Dutch initiatives – Amsterdam Data Science and Jheronimus Academy of Data Science – that bring together different universities with their local industry and government partners to offer higher education and research. Drawing on analysis of publicly available material and interviews with key actors, and on insights from STS scholarship about the 'triple helix' (Leydesdorff&Etzkowitz, 1996) and knowledge infrastructures (Edwards et al, 2013) in this presentation I will address the following questions: How are data and data science conceptualized? What promises are made about the value of data, data science and data science institutes for students, and the local economy? How do data science institutes reconfigure power and resources within and between universities? How do the institutes handle the tension between local (industry and government) needs with the Dutch research policy emphasis on international excellence? How are local and national knowledge infrastructures mobilized to support the plans of such institutes?

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## Individual Submission

Paper Abstract

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