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## **Preface: Governance by Infrastructure**

Léa Stiefel, Morgan Currie, Francesca Musiani, Alain Sandoz, Antti Silvast,  
Robin Williams

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# Preface

by Léa Stiefel, Morgan Currie,  
Francesca Musiani, Alain Sandoz,  
Antti Silvast and Robin Williams

## Abstract

While infrastructures are governed by institutions and rules, they also govern us, as social actors, by their very design. This special issue is dedicated to the study of the governance embedded in infrastructures, as opposed to the governance of the effects they might produce. From machine learning to artificial intelligence, from gig economy platforms to the infrastructures used by governments for advertising or social security, the articles in this special issue highlight the digital governance we are subject to, while exploring alternatives we might consider.

Railways, motorways, telephone networks, power grids, the Internet — all are examples of frequently mentioned infrastructures in research on the topic. For science and technology studies (STS), the field of social science in which this editorial is rooted, infrastructures refer to those ubiquitous, enabling resources, organised in the form of networks (Bowker, *et al.*, 2010). Closely linked to people, social activities, and organisational structures, infrastructures are more than material things: they are complex assemblages of socio-technical components (Star and Ruhleder, 1994). The infrastructure perspective shifts attention from discrete artefacts or systems to extended “systems of systems”.

In a conventional sense, infrastructures are governed by institutions and rules. This remains true under the influence of digitization, for example, in the case of traditional critical infrastructures, now underpinned by big data (Michalec, *et al.*, 2022). Conversely, our infrastructures also govern us as social actors. By their very design, they embody specific arrangements of power and authority (Winner, 1980), thereby participating in particular forms of “social ordering” (Law, 1992).

The articles in this special issue consider cases of digital systems whose ambitions are infrastructural, that is, they aim to shape, enable and sometimes deliberately constrain life in common. The focus is on the governance generated **by** those digital constructs, as opposed to the governance **of** (Musiani, 2016) the effects they produce.

The story of this special issue on *Governance by infrastructure* goes back to a workshop held at the

University of Lausanne in March 2022 (<https://wp.unil.ch/workshopgbi/>) [1]. The event was supported by the Swiss National Science Foundation and brought together two scientific communities working in the field of information infrastructure studies, platform studies, and Internet studies: the Institute for the Study of Technology and Innovation (ISSTI) at the University of Edinburgh and Lausanne's Laboratoire d'Etudes des Sciences et des Techniques (STSLab). Some 30 senior and junior researchers met in Lausanne to discuss their work. Following the workshop, and building on its themes, a call for papers was drafted to encourage the early career participants to fully present their research in articles.

The five contributions below will be augmented in forthcoming issues of *First Monday*. The stories told in these initial pieces underline the political importance of looking closely at the potential of digital technology to shape the ways we live together.

The first article, a research note by **Lara Dal Molin**, examines the case of novel generative machine learning (ML) systems known as large language models (LLMs). Dal Molin's paper shows how these digital systems reinforce biases found in binary categorisations, particularly of human characteristics (such as race and gender biases), already observed in their older ML counterparts. The author captures these categorisations, created and reinforced by infrastructures, through the concept of 'language as infrastructure'. To counter such developments, the author calls for new approaches to the governance of LLMs, such as dataset curation and participatory design, as a form of contestation.

The second article, by **Sophie Taylor**, takes the case of artificial intelligence (AI) and examines the role of policy discourse in the infrastructuring of AI. Using the U.K.'s national strategy as a key source of policy, she shows how the document is stabilising a particular assemblage of AI that privileges particular modes of knowledge and power, with material consequences. Taylor's article makes both a conceptual contribution, exploring the relationships between infrastructure and discourse, rhetoric and materiality, and a methodological one, applying a skillful reading of a key document to examine the U.K.'s role and approach in the 'global race for AI dominance'.

The third article, by **Jessica Pidoux**, **Paul-Olivier Dehaye**, and **Jacob Gursky**, focuses on an advocacy initiative undertaken by a group of Uber drivers in Geneva, with the aim to regain access to their personal data. The authors reveal the collection of personal data generated by the Uber platform through an ethnographic narrative combining an academic and a practitioner's perspective. By reintegrating the data with the tools developed by the initiative, drivers can construct a shared sense of their work and of working time, which they will then defend in the legal arena of labour rights.

The fourth article, by **Ben Collier**, *et al.*, examines the case of the Meta Ad Library as used by the U.K. government to target messages towards particular demographic groups. Using the Meta Library's data, recently made public by European legislation, the article shows how these groups are formed from synthetic categories selected by governments (or their advertising agencies) to circumvent Meta's policies preventing the targeting of protected characteristics. The infrastructure of online advertising, repurposed by government agencies to deliver their campaigns to carefully constituted target groups, emerges as a new form of state power to shape and constitute its citizens.

The fifth article, by **Lena Podoletz** and **Morgan Currie**, focuses on the case of a U.K.-wide automated social security system called Universal Credit (UC). Using interviews conducted in 2022 and 2023, it shows how the system, based on monthly assessments, conflicts with claimants' temporalities, leading to situations of stress and anxiety and, in some cases, loss of entitlement. The authors describe these situations as examples of 'temporal punitiveness' imposed on claimants by the system's internal mechanisms, with no apparent computational or policy justification.

From ML to AI, from gig economy platforms to the infrastructures used by governments for advertising or for social security policies, the articles in this special issue shed light on the digital governance to which we are subjected as citizens and workers. We don't always have a choice not to use those systems which calls for actively exploring alternatives and finding means to promote them. 

## About the authors

**Léa Stiefel** (Ph.D.) is a research fellow at the Swiss Competency Centre for Penal Sanctions (<https://www.skjv.ch/fr>). She is also vice-president of IRIN, an independent research institute on digitisation.

E-mail: lea [dot] stiefel [at] gmail [dot] com

**Morgan Currie** is a senior lecturer in Data and Society in Science, Technology and Innovation Studies at the University of Edinburgh, where her research focuses on open and administrative data, automated welfare, and activists' data practices.

E-mail: morgan [dot] currie [at] ed [dot] ac [dot] uk

**Francesca Musiani** is a tenured researcher in the French National Centre for Scientific Research (CNRS) in France and deputy director of its Centre for Internet and Society. Her research explores Internet governance and in particular, Internet infrastructures as instruments of power.

E-mail: francesca [dot] musiani [at] gmail [dot] com

**Alain Sandoz** is an associate professor in computer science at the University of Neuchâtel in Switzerland. His background comes from distributed computing systems and his interests are the (socio-technical) architectural mechanisms that underpin governance in IIs.

E-mail: alain [dot] sandoz [at] unine [dot] ch

**Antti Silvast** is an associate professor at LUT University, School of Engineering Sciences, Social Sciences, in Finland. He is a science and technology studies (STS) scholar specializing in interdisciplinary, energy research, and methodologies, and is the coordinating editor of the journal *Science & Technology Studies*.

E-mail: antti [dot] silvast [at] gmail [dot] com

**Robin Williams** is Director of the Institute for the Study of Science, Technology and Innovation at the University of Edinburgh. His current work applies the biography of artefacts perspective to address the design and implementation of information infrastructures through multi-site and longitudinal ethnographic investigation.

E-mail: R [dot] Williams [at] ed [dot] ac [dot] uk

## Note

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