Introduction
Visualizing the Social

Yanni Loukissas

Making use of maps, timelines, trees, and networks, the authors in this section are responding to a mounting call in STS (Latour 2008a; Galison 2014) for new forms of scholarship that can visualize the social. They have found ways of creatively identifying and presenting evidence of human and nonhuman relationships imprinted in digital data: either collected through purpose-built monitoring tools or extracted from the residue of regular computer use.

Practices of visualization, which can encompass a range of representational techniques designed to "help people make sense of data" (Kennedy et al. 2017), have long been a subject of study in STS (Lynch and Woolgar 1990; Coopmans et al. 2014). Innovations in data representation play a central role in the history of science and technology. Visualization helped a Renaissance astronomer track celestial changes (Biagioli 1993), an Enlightenment economist account for the financial health of societies (Tufte 2001), and a Victorian doctor diagnose the source of an urban epidemic (Johnson 2007). The power of contemporary technoscience depends on its ability to "draw things together" through tools that allow data from across temporal and spatial divides to be jointly analyzed (Latour 1990).

In recent years, scholars have written about a new wave of digital visualization tools, which have transformed professional relationships and identities across a range of domains including engineering (Downey 1998), life science (Myers 2015), nuclear weapon design (Gusterson 1998), architecture (Loukissas 2012), and other contemporary professional cultures (Turkle 2009). But despite the long-standing interest of STS scholars in visualization, only recently has the practice itself been recognized as a potent method for the field (Vertesi et al. 2016). This portion of the book brings together a set of speculative and experimental essays that consider how visualization might not only enhance what STS scholars already do but also lend shape to the social: a subject that we know inherently resists stabilization and thus static representation (Latour 2008b).

Today, in 2019, it is a hallmark of the digital turn in STS that scholars are embracing not only new subjects—data and software, digital infrastructures, reconfigured bodies, and renewed global connections, all topics broached in this volume—but new digital methods, such as visualization. For STS, taking up digital visualization as a method means learning to identify new forms of evidence manifest in digital data. As potential traces of the social, such data offer openings for novel perspectives on both human and nonhuman action at a scale and resolution previously not possible (Rogers 2013). The abundance of digital communications,

in particular, has been framed as a staggering opportunity, if also a potential ethical minefield (boyd and Crawford 2012), for social research. But digital data are not straightforward representations of social relations; they are complex "assemblages" (Kitchin and Lauriault 2014) that must be laboriously unpacked from their enveloping infrastructures (Bowker et al. 2009). Transforming digital ephemera into "alleged evidence" (Borgman 2015) for STS means acknowledging the construction of these data as well as their limits, including how they differ from traditional grounds for claims making embraced by the field, such as interviews, direct observations, or archival sources. The authors included here handily demonstrate how to do this, while also addressing a number of reflexive questions about visualization: How do different types of digital data structure social inquiry? Do visualizations, which make data legible, also transform those data? Who is empowered to make data and visualizations, and what kinds of audiences can decipher them? These questions find concrete form in the hands-on engagements with visualization in the chapters that follow.

Cardoso Llach is the most intentional in his use of visualization as a means of claims making. He has built his own custom visualization tools to illuminate the social in what he calls "digital traces" found in architectural practice: "vestiges of sociodigital transactions that are typically hidden from view and discarded from the end result." The resulting images are both aesthetically evocative and analytically precise: revealing the "sociodigital infrastructures of contemporary design practices." Meanwhile, Salamanca's use of visualization is more pragmatic. It is a means of measuring *social viscosity*, "the resistance to social action flow elicited by human and nonhuman actors acting concurrently." His visualizations are a means to an end: portraying the social as an identifiable phenomenon, which interactive artifacts can be designed to intervene into. Munk et al. delve into the context of visualization practice itself. Their chapter asks us to reflect on the ways in which visualization shapes relationships between scholars and subjects. As a counter measure, they suggest "participatory" approaches to visualization, with the promise of bringing about a kind of "common world." Finally, Venturini et al. ask us to step back even further, to consider how well digital methods—visualizations of networks in particular—actually map onto conceptions of the social developed for actor-network theory, a field-defining technique for STS that illuminates the associations between actants, human and nonhuman (Latour 2008b).

These varied approaches offer a glimpse of what the social might become, when seen through the lens of visualization. Moreover, the authors are implicitly asking what an STS researcher becomes when they adopt new forms of digital data as a way of seeing (Passi and Jackson 2017). Cardoso Llach inhabits a dual role as a designer of visualizations as well as a scholar of design: effectively demonstrating how visualization can be enrolled in participant observation. Salamanca models how data might help STS researchers intervene in social relations, by incorporating data for analysis and prediction. Munk et al. also hope to reshape social relations, but using a reflexive approach; they use visualization to break down the boundaries between scholars and the social groups they study. In contrast to the others, Venturini et al. ask how STS researchers can resist changing too much, by staying true to the deep roots of the field, even while opportunistically making use of available digital data.

These answers help us understand how a variety of ways of doing visualization might be applicable in STS. They are by no means the only answers (also see the chapters by Calvillo and Loukissas in this volume), but they deftly illustrate what it

takes to successfully navigate the obstacles of methodological invention. The next generation of scholars might choose to follow one or more of these established channels or steer off on their own, with these contributions in mind as useful way-finding guides.

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