

the United States and help to manage the electricity system. Canay Özden-Schilling's *The Current Economy: Electricity Markets and Techno-Economics* wants to know how this is possible. She asks: "what does it take to build markets in electricity—what kind of work and experience are involved in making, maintaining, and inhabiting them?" (p. 3).

True to its complex subject, *The Current Economy* takes the reader on a journey that covers long stretches of time and multiple field sites. It covers the humble beginnings of the U.S. grid in the late nineteenth century just as much as the current smart-grid revolution. We move from MIT workshops where engineers and economists wrote the first pricing mechanisms in the 1970s (Chapter 1: Regulating) to EnTech, where data workers construct ever more granular databases to represent the electricity system for traders (Chapter 2: Representing). We visit optimization researchers at Carnegie Mellon who develop the smart grid (Chapter 3: Optimizing) and finally arrive at the disgruntled citizens of West Virginia and Illinois who try to prevent the construction of transmission towers in their backyards (Chapter 4: Protesting). Oral histories and archival sources supplement ethnographic observations.

Conversing fluently with literatures in economic sociology and anthropology, the book's theoretical argument ties the somewhat eclectic selection of field sites together. Özden-Schilling argues that we need to understand market-making as a highly decentralized activity by diverse groups of specialized experts—electrical engineers, data scientists, optimization experts, economists, activists, and many others. These experts work in "heterogeneous technological domains" that are often quite separate from each other and follow distinct work cultures. Yet they decisively shape the nexus of electricity markets and the technical infrastructure of the electricity system—the "techno-economic order."

This argument helps to correct two misperceptions. First, research on market creation often focuses on political processes and traces the influence of various political ideologies. Instead, *The Current Economy* shows us that specialized experts sit in an "unsuspected seat of power" (p. 37).

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GEORG RILINGER

Max-Planck-Institut für Gesellschaftsforschung
ril@mpifg.de

Electricity is a commodity unlike most others. You cannot trade it in the same way as you might coal or steel. Electricity can neither be stored nor individuated easily. Generators produce most of it the moment before it is consumed, releasing their outputs into a vast transmission system. Here, all inputs merge and interact with each other, travelling at close to the speed of light to consumers across large territories. This vastly complex concert of interacting inputs and outputs needs to be coordinated from a central location. In combination with the high upfront investment costs for new equipment, these features seem to suggest that electricity is a natural monopoly. Yet today, competitive markets trade electricity contracts all across

Building and maintaining the markets' infrastructures, they work without much ideological baggage or clear political interests. References to neoliberalism therefore do not help us understand how the resulting markets operate. Second, to the extent that the literature examines the work of technical experts, it has traditionally focused on economists. *Current Economy* suggests that this emphasis is misplaced. In electricity markets, economists play a mediating role. They mainly offer a common language for diverse groups of experts with more specialized knowledge. To understand market-making, we thus have to look at the complex interactions between these different cultures of expertise.

The chapters demonstrate these two core points in different ways. For example, "Representing" deftly illustrates how data workers follow highly idiosyncratic goals in a market intelligence firm in Boston. They primarily want to increase the granularity of their databases to get ever more perfect representations of the electricity system. This love for granularity seems to be self-serving, as it relates only indirectly to the needs of their clients. Similarly, the third chapter explores scientists at an Optimization Laboratory at Carnegie Mellon who view markets as being akin to algorithms. They try to reformat the electricity market to become more modular, decentralized, and ordinary—retail customers are supposed to actively respond to market prices, allowing the markets to penetrate into the thickets of everyday life (p. 100).

But the culture of optimization turns out to be somewhat orthogonal to microeconomic theories that address the logic of supply and demand in these markets. The researchers therefore trigger unexpected evolutionary changes as their expertise begins to reformat the market.

At its best, the book uses powerful vignettes to demonstrate its core claims. For example, we meet researcher Jay who drives through the streets of Pittsburgh in a "data truck" to survey pedestrians. He tries to identify nudges to create consumers who are more responsive to market prices (p. 123). It is evident that scientific experts like him follow considerations that flow from their distinct expertise rather than

large-scale political visions about markets. It is likewise evident that their expertise powerfully shapes the techno-economic orders of electricity systems.

The book should be of keen interest to sociologists, who have not given much attention to electricity markets. Not only are electricity markets closely implicated in climate change and its mitigation; the challenges to commodify something as elusive as electricity also make these markets an ideal test case for sociological theories of market creation. Özden-Schilling's argument therefore advances our collective understanding in important ways. As market action becomes increasingly mediated by digital infrastructures, it is incumbent that we come to terms with the messy reality behind the work culture of the experts she studies.

Yet I think the book also has two (minor) shortcomings. First, the narrative sometimes gets lost in ornate theoretical discussions. For example, in Chapter Two, Özden-Schilling offers a relatively abstract theorization of information as "difference that makes a difference" (p. 66). But she never really puts this concept to use. Instead, the discussion implicitly reverts to common sense and treats information as a representation of an underlying reality. Unnecessary theoretical flourishes like this render the analytical vocabulary diffuse. This is a problem because the theory needs to tie the somewhat eclectic empirical settings together. As the analytical framework becomes blurry, so does the larger picture the book tries to develop.

Similarly, the book also overstates some of its claims in an (unnecessary) effort to emphasize its contribution. It is hardly fair to claim that the Social Studies of Finance generally privilege the expertise of economists in studies of market creation, for example (MacKenzie 2009; Pardo-Guerra 2019). Conversely, economists do not always or mainly work as mediators (pp. 29–30). They do, but specialized mechanism designers and industrial organizations experts are routinely involved in market design as well.

Such overstatements are closely related to a second, more serious problem. The book never looks at the techno-economic order as a whole. Of course, no ethnography could provide a comprehensive picture of all

relevant expert cultures. But the book asks an ambitious question at the outset: how are electricity markets possible? (p. 3). If anything, this seems more puzzling by the end. Granted, vastly disparate and segregated forms of expert work produce these markets. But how do such fragmented and inconsistent cultures produce sufficiently coherent decisions to keep the electricity system functional? To answer this question, the book would have needed a theory about how the different work cultures relate to each other and how decisions come to be integrated. Because Özden-Schilling relies on an eclectic sample of experts and never locates their contributions relative to the system as a whole, an answer to these questions remains elusive.

However, these minor problems do not take away from the book's many accomplishments. Özden-Schilling offers a compelling, well-researched, and wide-ranging look into expert cultures that contribute to the creation of electricity markets. Her core theoretical argument is well substantiated and her intervention into the literature sound. Anyone should read this book who is tired of facile attacks on "neoliberalism" and wants to know how complex markets are actually made.

References

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- Pardo-Guerra, Juan Pablo. 2019. *Automating Finance: Infrastructures, Engineers, and the Making of Electronic Markets*. New York: Cambridge University Press.
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