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Tool-power: Water infrastructure as wellsprings of state power

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ABSTRACT

This article examines the role of water infrastructure in the production of state power, and advances an understanding of nonhumans as power brokers. While state power is increasingly understood as the effect of material practices and processes, I draw on the idea that objects are 'force-full' to argue that infrastructure helped cement federal state power in Tijuana over the twentieth century, and simultaneously limited the spaces of stateness in surprising ways. To support my argument, I examine three sets of water infrastructure in Tijuana, Mexico. First, I examine the key constitutional edicts, laws, and treaties that enabled bureaucratic development and staked territorial claims on water during Mexico's liberal era (1876–1911) and post-revolutionary period. Second, I trace the development of Tijuana's flood control and potable water conveyance networks, designed and built between the 1960s and the 1980s, which enabled rapid urban growth but ultimately cultivated dependency on a distant, state engineered water source. Finally, I show how the ordinary infrastructures of water supply—such as barrels, cisterns, and buckets, common tools in Tijuana homes—both coexist with and limit state power, resulting in variegated geographies of institutional authority, punctuated by alternative spaces of rule. Together, these infrastructures form the 'hydrosocial cycle' of Tijuana, which I use to illustrate the uneven spatiality of state power. In conclusion, I draw on insights from object-oriented philosophy and science and technology studies to move past the anthropocentric notion of infrastructure as 'power tools'—handy implements used by humans to exercise dominion—toward *tool-power*: the idea that objects-in-themselves are wellsprings of power.

1. Introduction

On a clear winter day in Tijuana, during the final leg of our household survey, my research team and I knocked on the door of a cement block home, tucked among the steep hills of the city's southwest edge. Around us, paved roads and electricity lines criss-crossed the *colonia*, or neighborhood. A woman answered the door. At the mention of "water", she interrupted our opening speech and led us straight back to her patio. In a brightly painted courtyard overflowing with plants, the patio was filled with an impressive array of water conduits: hoses, PVC pipes, candy-colored plastic buckets, and a rain barrel tucked under the metal roof. Days earlier, a winter storm dumped rain across northwest Baja California, filling the barrel with unfiltered runoff. The woman carefully explained how she directs each type of water toward a different use: rooftop rain for garden irrigation, toilet flushing, and domestic chores; municipal tap water for bathing and laundry; and commercial bottled water for drinking and cooking. For years, before the piped network was established, truck vendors (called *pipas*) and self-built rain catchment were their only sources of water supply. Given that her *colonia* now boasts regular water service, we asked why she continues harvesting rainfall. She paused, then answered: "Well, I feel a responsibility to take care of water, because we already had built the infrastructure and were accustomed to managing our own system. Because I feel more independent when I can turn off the tap."

This encounter reveals the intricate governance of infrastructure in cities like Tijuana: where residents depend on formal, informal, and self-provisioned sources of water supply, particularly when governments fail to extend or ensure universal water provision (Gandy, 2006, 2008; Bakker, 2003, 2010; Swyngedouw, 2004). This woman, like many household laborers around the world, keeps the rain barrel clean and pays the municipal water bill on time, making water flow through diverse conduits and infrastructures (O'Reilly, 2006). She juggles a tricky constellation of state and non-state rule, born through reliance on the public water network and personal preference for "our own system." Yet if this Tijuana home embodies the prosaic and variegated manifestations of stateness in everyday life (Painter, 2006), it also suggests that infrastructure *itself* plays a role in cultivating or delimiting state power. Indeed, the idea that *objects*—including all types of tools, beings, and things—are pivots for political inquiry is prominent in science and technology studies (Haraway, 1991; Heidegger, 1977; Winner, 1977) and gaining greater traction in political

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ecology and geography (Bennett, 2010; Birkenholtz, 2009a, 2009b; Braun and Whatmore, 2010; Furlong, 2011; Kaika and Swyngedouw, 2000; Latham and McCormack, 2004; Swyngedouw, 2009; Shaw and Meehan, 2013; Meehan et al., 2013).

This article examines how objects—specifically, water infrastructures—have produced state power in Tijuana. I build on the notion that objects are 'force-full'—or "capable of creating, policing, and destroying the very contours of existence" (Shaw, 2012, p. 613)—to argue that infrastructure helped cement federal state power in Tijuana over the twentieth century, and simultaneously limited state power in surprising ways. My approach is informed by object-oriented philosophy (OOP): a loose band of 'speculative realists' who challenge human-centered notions of being and existence (Bryant et al., 2011; Meillassoux, 2008). Despite its metaphoric reliance on tools, OOP is less useful explaining why or how certain objects are made, than in theorizing how objects exist, affect, and potentially effect. Graham Harman (2002, 2005, 2009, 2011), in particular, provides a useful blueprint to explore the non-human composition of the world. For Harman, objects like rain barrels, reservoirs, and federal laws are not equally real, but are equally *objects*—capable of affecting and producing the world in distinct and sometimes forceful ways. "Forget for a moment everything that you think you know about the differences between people and utensils," he writes (2002, p. 37), "...both hammers and Dasein are involved in the sheer execution of their respective realities; however different these realities may be from one another, both unleash their forces in the world." In this article, I advance the idea that objects are force-full by examining how infrastructure helps create, destroy, or limit the contours of what we call the state. In short, I move past the idea that infrastructures are 'power tools'—handy implements used by humans to exercise dominion—toward the notion of *tool-power*: that objects-in-themselves are wellsprings of power.

Part of the conceptual deadlock stems from how the 'state' has been traditionally conceived: as a reified 'thing' that orders civil society from above (Mitchell, 1999; Painter, 2006). In Mexico, for example, the infamous image of society as a 'pyramid' of social power (Paz, 1972), structured and anchored by the state, is echoed by decades-long efforts to federalize and concentrate water decision-making in a single bureaucratic agency, the Comisión Nacional del Agua or CONAGUA (Aboites, 1998; Castro, 2006; Scott and Banister, 2008; Wilder and Romero Lankao, 2006). But in recent years, the Mexican state is increasingly understood as the *effect* of embodied and often mundane practices, "aimed at stabilizing meaning around diverse sets of hegemonic, economic, political and cultural projects, often in the context of rancorous dissent among institutionally situated citizen-subjects" (Banister, 2007, p. 465; see also Mitchell, 1999, 2002). Claudio Lomnitz (2001), for example, locates the production of state power in diverse practices and unexpectedly 'cultural' spaces: the cantina, the well, the altar, the *lavadero*. "The flexibility that Mexicans may lack at the level of formal political discourse and discussion," argues Lomnitz (2001, p. 154), "they have in political practice, and these accommodations are enacted in ritual and its imagery." State formation is thus enacted and contested in daily life: from the intimate spaces of agricultural estates in southern Mexico (Bobrow-Strain, 2007) to the irrigated fields and renegade flows of the northern borderlands (Banister, 2007, 2010). In and beyond Mexico, the everyday spaces of state power are products of an entangled thicket of objects and practices: from dams to discourses, meters to mapmaking, pixels to bureaucrats (Banister, 2010; Carroll, 2012; Castro, 2006; Harris, 2012; Hausermann, 2012; Meehan et al., 2013; Mitchell, 2002; Meehan et al., 2013). In this paper, I draw on the case of Tijuana to make two main claims: first, a series of key infrastructures helped territorialize water and consolidate federal state power over the 20th century; and second, a diverse set of objects—some 'domestic' like the rain barrel, other 'de jure' like the Mexican constitution—work to *limit* the spatial scope of stateness, resulting in variegated geographies of power and authority, punctuated by alternative spaces of rule.

The article continues with a brief overview of object-oriented thinking in water geography, and outlines potential insights from philosophy and science and technology studies (STS). I then explore three sets of water infrastructure in Tijuana.[1] Drawing on archival data, I first examine the key constitutional edicts, laws, and treaties that staked territorial claims on water during Mexico's liberal era (roughly 1876–1911) and post-revolutionary period. I treat law as infrastructure: as an assemblage of ideas, norms, and precedents, with intentional but sometimes accidental effects (Latour, 2010). I then focus on Tijuana between the 1960s and 1980s, a key period in which the federal government designed and built major flood control and potable water conveyance networks. In Tijuana, these projects had the lasting effect of concentrating state power at the federal level, through dependency on a distant, heavily engineered water source: the Colorado River. I then draw on interviews with Tijuana residents to trace how the ordinary infrastructures of water supply—such as barrels, cisterns, and buckets, common tools in Tijuana homes—cultivate alternative spaces of rule, in effect filling institutional gaps produced by federal laws and municipal infrastructure.

In the penultimate section, I suggest these infrastructures form the 'hydrosocial cycle' of Tijuana. The concept has been explored in several ways: to trace the emergence of hydrologic science, policy, and knowledge (Budds, 2009; Linton, 2008; Swyngedouw, 2009), to explain how water's physical properties shape social relations (Bakker, 2012; Budds, 2008), and to emphasize the inseparability of biophysical and social processes in water politics (Swyngedouw, 2004, 2009). However, even as the hydrosocial cycle illuminates the metabolic pathways of water through the city (Gandy, 2004), it has mostly been used to spotlight formal networks, to the detriment of informal infrastructures. In this section, I use the hydrosocial cycle as a metaphysical heuristic—a means to illustrate the "way in which objects are joined or pieced together" (Harman, 2005, p. 2)—to show how official *and* ordinary infrastructures work as conduits of power. In the final section, I conclude with potential insights of an object-oriented approach.

2. From power tools to tool-power

The notion that tools are involved in state power is not without precedent. Karl Wittfogel (1957), for instance, explained the rise of centralized authority in 'despotic' regimes through the emergence of dams, canals, and irrigation technologies. Even in the 'democratic' West, massive waterworks and scientific expertise served to entrench bureaucratic control (Worster, 1985). State agencies used scientific instruments and reports to render water legible to administration and planning: maps were drawn, data were collected, deficiencies were calculated, wetlands were drained, rivers were dammed, and reservoirs built to 'conserve' water for navigation and beneficial uses—largely at the behest of a capitalist state (Aboites, 1998; Linton, 2008; Molle et al., 2009; Wester et al., 2009; Worster, 1985). Water itself is often considered an object: a notoriously heavy, fugitive, non-substitutable resource necessary for life—features that make it difficult to fully commodify and privatize (Bakker, 2010, 2012).

Within cities, water infrastructures are understood as key pieces of accumulation and circulation, built and maintained by the state and reflective of deep sociospatial inequalities. Urban

[1] Legal documents and engineering reports were collected in 2010 from the Archivo Histórico del Agua in Mexico City. Interviews and observations were conducted between 2007 and 2008 in Tijuana.

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