[CV-01-026] Cartography and Power

Abstract

Over twenty five years ago, Brian Harley (1989, p. 2) implored cartographers to “search for the social forces that have structured cartography and to locate the presence of power – and its effects – in all map knowledge.” In the intervening years, while Harley has become a bit of a touchstone for citational practices acknowledging critical cartography (Edney, 2015), both theoretical understandings of power as well as the tools and technologies that go into cartographic production have changed drastically. This entry charts some of the many ways that power may be understood to manifest within and through maps and mapmaking practices. To do so, after briefly situating work on cartography and power historically, it presents six critiques of cartography and power in the form of dialectics. First, building from Harley’s earlier work, it defines a deconstructivist approach to mapping and places it in contrast to hermeneutic phenomenological approaches. Second, it places state-sanctioned practices of mapping against participatory and counter-mapping ones. Third, epistemological understanding of maps and their affects are explored through the dialectic of the map as a static object versus more processual, ontogenetic understandings of maps. Finally, the chapter concludes by suggesting the incomplete, heuristic nature of both the approaches and ideas explored here as well as the practices of critical cartography itself. Additional resources for cartographers and GIScientists seeking to further explore critical approaches to maps are provided.

Keywords: cartography, history, politics, power

Author & citation

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Explanation

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1. Definitions

counter-mapping: Mapping practices that set out to question, trouble, or contest dominant power relations in society through the act of mapping and/or the maps produced.

critical cartography: A set of mapping and spatial visualization practices that begin from the acceptance that maps, like other socio-technical systems, are not and never can be neutral. Critical cartographic work accepts that maps are expressions of power and seeks to

contest, critique, and subvert this power as it seeks to create (and critique) new ways of knowing, seeing, and being in the world.

critical GIS: A term for research that brings social theoretical concerns into tension with geospatial information systems and science. Work in the area includes both critiques of the orthodox paradigms of GISciences as well as the conduct of geospatial analysis in pursuit of specific social and cultural goals.

deconstruction: A methodology for revealing the underlying normative assumptions that are built into a text by the powerful. It does so through a focus on the margins of a text, what is and is not included within it.

hermeneutic phenomenology: A branch of philosophy concerned with the situated nature of human experience in the world, that takes interpretation as a fundamental, integral act of being.

ontogenetic: Something that is in the process of continually being brought and rebrought into existence.

surveillant: An act of top-down recording of activity by organizations or those in power.

sousveillant: Using technology to mirror, record, and confront those in power from a bottom-up perspective.

technicity: The power of technology to act in and affect the world.

transduction: A constant process of making and remaking.

2. Cartography, Power, and History

Maps, regardless of how one theoretically understands them or methodologically constructs them, make claims upon the world. These claims, expressed through what is included or excluded from a map and how those choices are represented in the mapping process, enable and constrain what can be known about the spaces and places a map depicts. As such, maps are intrinsically and inextricably expressions of power. As a means of situating the dialectical approaches to deconstructing and reconstructing maps that follows, this entry first provides two historical examples of the entanglements of cartography and cartographers with expressions of power. Specifically, it first discusses how cartography and mapmaking can be seen as intrinsic to the very formation of the modern nation-state and its citizens, focusing particularly upon colonial expressions of power, and then depicts the role the military-industrial complex within the United States played in the very formation of certain forms of analytic cartography (and GIS).

The specific techniques, methods, and approaches to mapmaking and reading emerged in different places at different times (Pickles, 2004, p. 92), with the Babylonian Imago Mundi serving as generally agreed upon oldest example; however, Wood (2010, p. 22) has argued that – in terms of how modern cartographers understand and practice their craft – “there were no maps before 1500”. This provocative (and contestable) statement signals how the modern craft of mapmaking and interpretation is bound up in the establishment and

performance of the modern state. Following Thongchai's account of colonial mapping practices in the emerging Thai state (1994), Anderson (1991, p. 173) writes how maps "worked on the basis of a totalizing classification" (Anderson draws from the earlier dissertation version of Thongchai's work, see page xiv). More recently, the practice of analytical cartography and its influence upon GIS demonstrate the continuing ties between expressions of state power and cartographic praxis. Clark and Cloud (2000) depict how early work on automating and computational systems for geographic information processing were created during the Cold War for the United States military. Similarly, Monmonier (2002) demonstrates how many of the core technological apparatuses used for mapmaking have their roots in military applications. To this day, "the most effective mapping and imagery, in terms of coverage, scale, positional accuracy and currency, has been, and often still is, the exclusive preserve of the military" (Perkins and Dodge, 2009, p. 547). These examples are meant only to illustrate the ongoing relations between state power and cartography and to better situate the following approaches within the over-arching structure of cartographic practice, history, and technology; the reader is encouraged to see the **Additional Resources** for more detailed engagements with the history of cartography and power as the entry now turns to a series of heuristic dialectical approaches to the power of maps and map making.

3. Deconstructivist and Hermeneutic phenomenological approaches

3.1 Deconstructing the Map

Writing in the late 1980s, for Brian Harley, maps were always social constructs, cultural texts, suffused with power "[b]oth in the selectivity of their content and in their signs and styles of representation" (Harley, 1988, in Wood, 1992, p. 78). Challenging the established paradigm of maps as a communicative system (see, inter-alia, Robinson & Petchenik, 1977; Robinson et al., 1995), Harley drew explicitly from post-modern theorists Jacques Derrida and Michel Foucault, as well as Wood and Fels' (1986) work using Roland Barthes, to suggest maps be seen as always constructed within a field of power relations.

Maps, in this view, both enable and suppress knowledge through the intentional and unintentional elements of the ideological practice of cartography. Harley referred to the suppression of knowledge within maps as "silences which arise from deliberate policies of secrecy and censorship" (Harley, 1988, p. 57). Maps are "practices and relations of power-knowledge" (Crampton, 2001, p. 241) and can be deconstructed alongside other socially constructed, rhetorical texts. The power of maps, in a deconstructivist view, can be found in two registers. First, there is the power exercised by the cartographer through the map production process. Second, there are the roles that maps play within elite discourses of society and in processes of colonization and accumulation by dispossession.

The deconstructivist approach to understanding the power of maps has proven a productive one for critical cartographers, allowing a "tack" between discourse analysis of maps and their epistemological framings and the historical, cultural, socio-economic, and political situatedness that led to their production (Elwood, 2015). Interactive, digital, personal maps and the everyday practices through which they are produced and of which they mediate are no longer so easily considered the cold, dead artifacts of the elite that Harley called cartographers to critique. But, GIScientists must continue to seek out "those 'aporias,'

blindspots or moments of self-contradiction" in any map they create or encounter (Norris in Harley, 1989, p. 8).

3.2 A hermeneutic phenomenology of mapping

While there were and remain notable disagreements within approaches to deconstructing the map as text, a related group of scholars approached the power of cartography through the lens of hermeneutic phenomenology. Often associated with the work of Martin Heidegger, **hermeneutic phenomenology** views consciousness as intrinsically linked to historically situated lived experience and places interpretation as a fundamental act of being human (Laverty, 2003). In critiques of cartography and geography more broadly, hermeneutic phenomenology has served as a method for questioning theories of truth and representation.

This approach extends from Harleyian concepts of **deconstruction** – on the limits of a text to reveal its underlying power dynamics - but is also informed by the debates of the early 1990s around the use of GIS (see, inter-alia, Taylor, 1990; Openshaw, 1991; Smith, 1992; Lake, 1993). Rather than seeing the terms as a complete embracing of logical positivism and absolute truth or a full rejection of GIScience, this work attempted to "develop a thorough-going ideological critique of the role and place of technology and social engineering in society" (Crampton & Wilson, 2015, p. 33). Influenced by the work of Heidegger on technology and drawing directly from Virilio, Benjamin, and others, Pickles (1995, p. 231) writes of mapping techniques as "extend[ing] a rationalistic logic – a universal calculus – to unify space as object, material, and fundament".

Historically, the influence of this particular approach can be seen in the original Friday Harbor meetings, the subsequent Initiative 19, the Varenius project, and in collected volumes like Ground Truth (See **Additional Resources** for a chart that places these projects temporally and in relation to other research). More recently, the legacy was revisited at a second Friday Harbor meeting (Thatcher et al., 2016a). The specific focus on interpretation, on the situatedness of all truth claims, marks it as distinct from pure deconstruction. The goal is not solely to deconstruct the map, but rather to interpret its meaning and, in so doing, to open avenues towards producing alternative representations and potentially alternative frameworks for understanding and being in the world (Pickles, 2004).

4. The God Trick and daily resistances

4.1 A God's eye view from the state

A common theme in both deconstructive and phenomenological approaches to understanding the power of maps is an engagement with the ways in which cartography and mapping has and continues to be enrolled in technoscientific, modernist, and colonial discourses. These critiques note that the power of maps tends to flow from the powerful to those less so as means of ordering and control. This can be seen to occur on two levels: first, in the technocracy around which maps are constructed and produced and, second, in the ways that maps instantiate specific views of the world as austere, absolute, and correct.

Obermeyer (1995) saw the foundations of a growing "hidden technocracy" in the emerging

computer-based systems of map design and production. Although focused specifically on GISystems, Obermeyer's critique draws upon a long history of concern with access to and representation within the technocratic structures of society; noting parallels between the scientific management of Taylorism and GIS employment's emphasis on education and technical ability. For Harley, drawing on Foucault, this was the "internal power" cartographers practiced in the design and production of maps (see Rose-Redwood, 2015, p. 4).

On another level, maps are tools for the production and dissemination of specific knowledges. In their production (or continual re-production, see **Section 4.2**) and interpretation, maps make claims upon the worlds they represent. This is the 'power of maps' (Wood, 1992): their ability to shape what is seen and what is not and, therefore, what can and is known through a given map. Maps tend to present austere, abstract views of the world, to present "observer epistemologies" (Couclelis, 1988) and 'views from nowhere' that fall into what Donna Haraway has called the "god trick" of an impossible objectivity (Haraway, 1988, 1991). Harvey (2000, p. 557) notes that this type of representation in interests of the powerful is true of the discipline of Geography as a whole, with maps serving as the field's "preeminent form of representation."

4.2 Participatory and sousveillant approaches

Against such approaches and critiques of the top-down power of cartography, researchers and practitioners have engaged in more participatory and sousveillant ("bottom-up") approaches to maps and mapping in a number of ways (see **Participatory Mapping**). While impossible to cover the variety of methods and epistemologies involved in participatory, public, and critical cartographic projects here, of particular interest are expeditionary approaches to mapping and critiques thereof, qualitative approaches to GIScience, and the sousveillant and resistive acts taken with mobile spatial devices (see Mobile Mapping & Responsive Design, forthcoming).

First, the expeditionary approach to mapping is perhaps most strongly associated with Bill Bunge and the Detroit Geographical Expeditions and Institutes which ran through the late 1960s and early 1970s (e.g. Bunge, 1971). John Pickles (in Crampton & Wilson, 2015, p. 33) summarizes this approach as "I can bring a technology, but you have the questions, you bring the information, and we'll work together." This approach can be read as "doubly radical" in its idea that not only could non-dominant power structures be made legible through mapping, but that the members of the communities in question must not only be subject, but also author, of the mapping projects (Thatcher, 2017). See **Additional Resources** for Warren and Katz (2014)'s discussion of the legacy of this approach.

Second, influenced by efforts to question GIS' strict association with quantitative approaches (Pavlovskaya, 2006; Schuurman, 2000; Sheppard, 1995), there has emerged a community interested in combining qualitative approaches with GIScience and cartography (Kwan & Knigge, 2006; Cope & Elwood, 2009; although, also see Leszczynski, 2009, for a discussion of potential limits).These approaches seek to incorporate new data and research methods into the recording, analysis, and visualization of spatial information. Kwan (2002), for example, combined GIS with travel diaries to highlight the different daily practices of women. Pavlovskaya (2009, p.162) argues that the visualization of non-dominant paradigms does ontological work: "Once visible, they exist and can no longer be ignored."

Third, alongside the advent of spatially-aware mobile devices and their use in the creation and appropriation of spatial data about daily life has emerged a growing practice of subverting previously surveillant systems into sousveillant ones. Coined by Mann et al. (2003), **sousveillance** is the act of using technologies to monitor those with institutional power and contest their (spatial) orderings of the world. When combined with spatial data, sousveillant practices include counter-cartographic practices like the Anti Eviction Mapping project which identifies and puts a name to those individuals who are driving eviction and gentrification processes in San Francisco.

Finally, it is critical to note that participation by a larger community in the process of map design and distribution does not inherently produce a cartographic critique of dominant power structures within society (Elwood, 2006). There is a great distance between the Bowman Expeditions appropriation of participation to further state and military goals (Wainwright, 2013; see also **Additional Resources** for information on the Bowman Expeditions and related controversies) and the autonomous cartographic efforts of the Counter Cartographies Collective to subvert similar goals on the campus of University of North Carolina Chapel Hill (Counter Cartographies Collective et al., 2012). **Counter-mapping**, as a term, was coined by Nancy Peluso (1995) to describe the methods by which indigenous activists were using maps to attempt to re-claim land access and use rights that were not represented in official state maps.

Further, many of these approaches to more ‘bottom-up’ mappings draw from diverse sets of theoretical and empirical commitments that can result in fascinating repetitions of similar visualizations across time and space. Where the Bostonography project uses new web-mapping technology to purposefully echo Kevin Lynch’s cognitive mapping projects (Woodruff and Wallace, 2010; Lynch, 1960), the visual similarities between the Anti Eviction Mapping Project’s relocation map and the similar one produced by the fourth Detroit Geographical Expedition for the Trumbull neighborhood are less intentional (**Figures 1 and 2**). Similar sets of concerns arise over time as cartographers and GIScientists have attempted to engage with the limits of both society and mapping; in so doing, it is necessary to retain a care for maps and mapping that allows critique to tackle “enframing assumptions while remaining invested in the subject” (Schuurman & Pratt, 2002, p. 291).

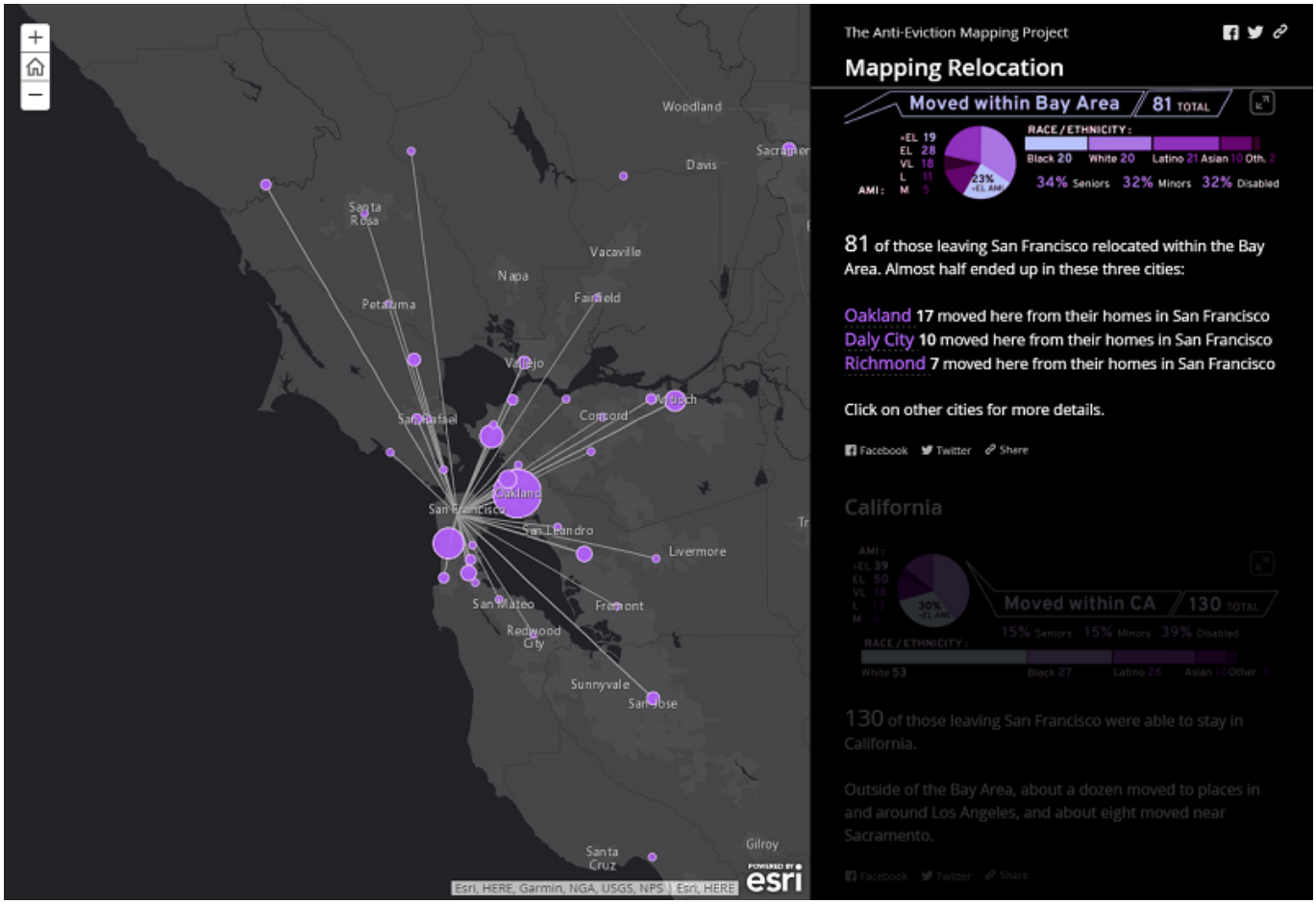


Figure 1. A map of where individuals have relocated when evicted from San Francisco. Map available at the Anti-Eviction Mapping Project. Source: Used with permission from the author.

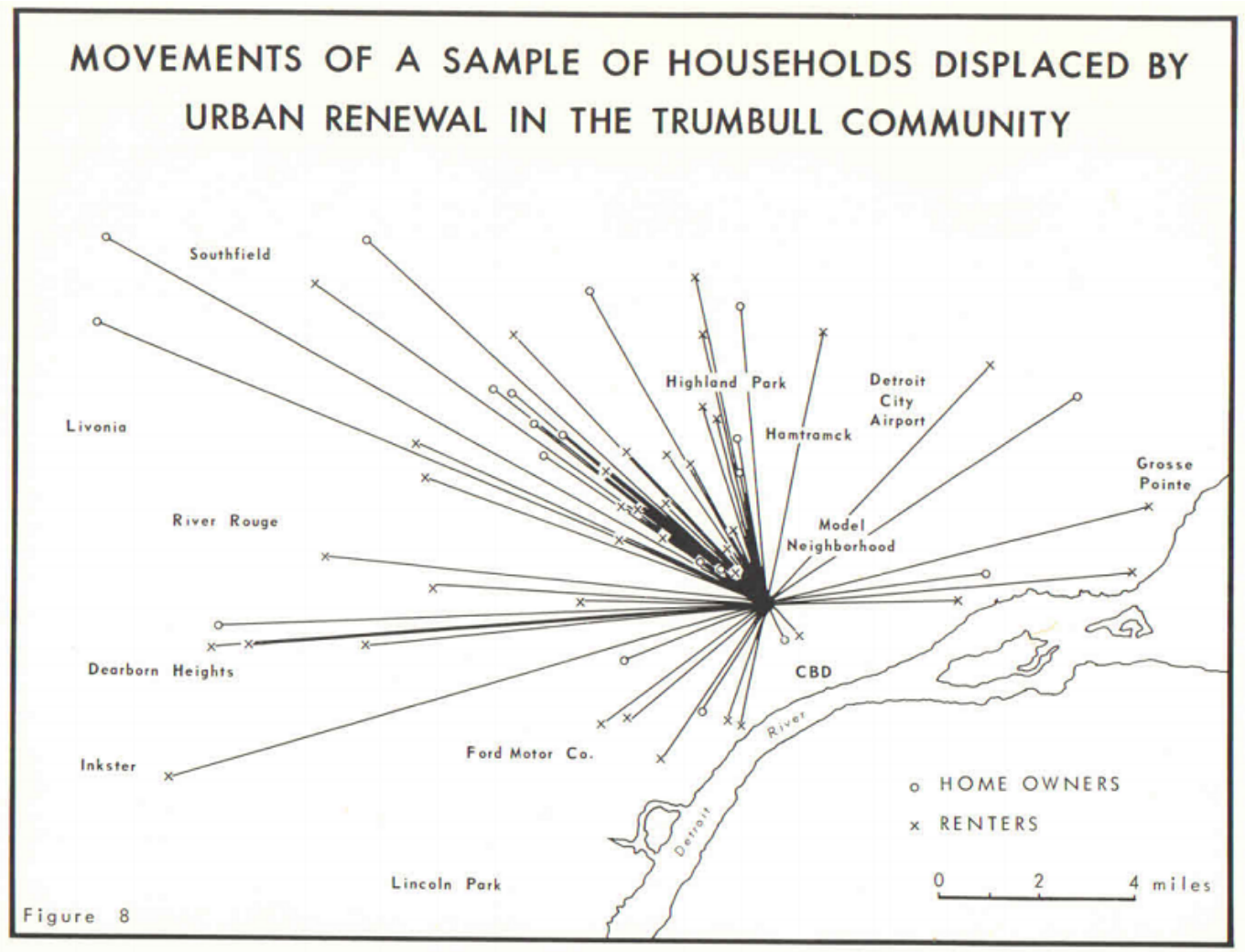


Figure 2. A map from the fourth DGEI that depicts where displaced households have moved within the Detroit metro region. FromThe Detroit Geographical Expedition and Institute Then and Now: Commentaries on “Field Notes No.4: The Trumbull Community.” Source: Map available from the Antipode Foundation's DGEI Field Notes. Used with permission of the author.

5. Fixed objects versus ontogenetic becomings

Alongside the view of maps as presenting views from above or below has come a more recent focus on maps as post-representational. In such **ontogenetic** approaches, maps are never ontologically secure, stable objects, but are rather constantly coming into being as they are created and recreated by multiple actors. Such views re-center the power of maps from what the map ‘is,’ or perhaps appears to be, towards a focus on mapping practices – those myriad acts that both bring maps and their interpretations into being. Such approaches often go “beyond the map” in order to focus on the ethnographic, embodied practices that go into both map production and interpretation rather than more textual ‘readings’ of existing maps as objects (Dodge & Perkins, 2015, p. 38).

By focusing on the coming into being of maps, ontogenetic approaches call attention to the shifting assemblages that increasingly go into the production and experience of maps. On

one level, a focus on maps as ontogenetic allows for a greater consideration of how spatial technologies increasingly **transduce** space and spatial relations (Dodge & Kitchin, 2005). In this view, it is the **technicity** of software, of mapping platforms, through which the power of maps functions (Kitchin & Dodge, 2007). On another level, these same assemblages of spatial data and visualization produce immensely personal maps used by individuals in their daily lives. By destabilizing the map as an object and focusing on the coming into being of the map in daily use, ontogenetic approaches allow for a greater understanding of the joyful practices of everyday life. The act of both map creation and map interpretation is resituated as a deeply personal, contingent, and social practice (Brown & Lauerier, 2006).

6. Power and praxis

It is important to note the specific, contingent nature of this discussion of cartography and power. The dialectics created for this entry are neither static nor meant as totalizing; rather, they are heuristics through which a variety of approaches to understanding and critiquing the power of maps might occur. Their selection, just as the selection of what to include or exclude in a map or database, inevitably reflects both the structure of the piece and the biases of the author. The following chart briefly outlines and provides resources for three such traditions:

Tradition	Key Ideas	Example Publications
Queer(ing) Cartographies, GIS	• Recognize queer labor and lives present in production of knowledge/maps • Interrogate political, economic, and social relations present in software, algorithms, code used to produce maps	Brown & Knopp (2008); Gieseking (2018)
Marxist Cartography	• Visualize and map the contours of capital and state power • Interrogate how mapping serves interests of the state	Lacoste (1973); Toscano & Kindle (2015)
Indigenous Mapping	• Make claims upon ancestral lands to secure tenure and other rights • Simultaneously, potentially make said lands visible for looting and destruction	Chapin et al. (2005); Hunt (2013); see **Figure 3**

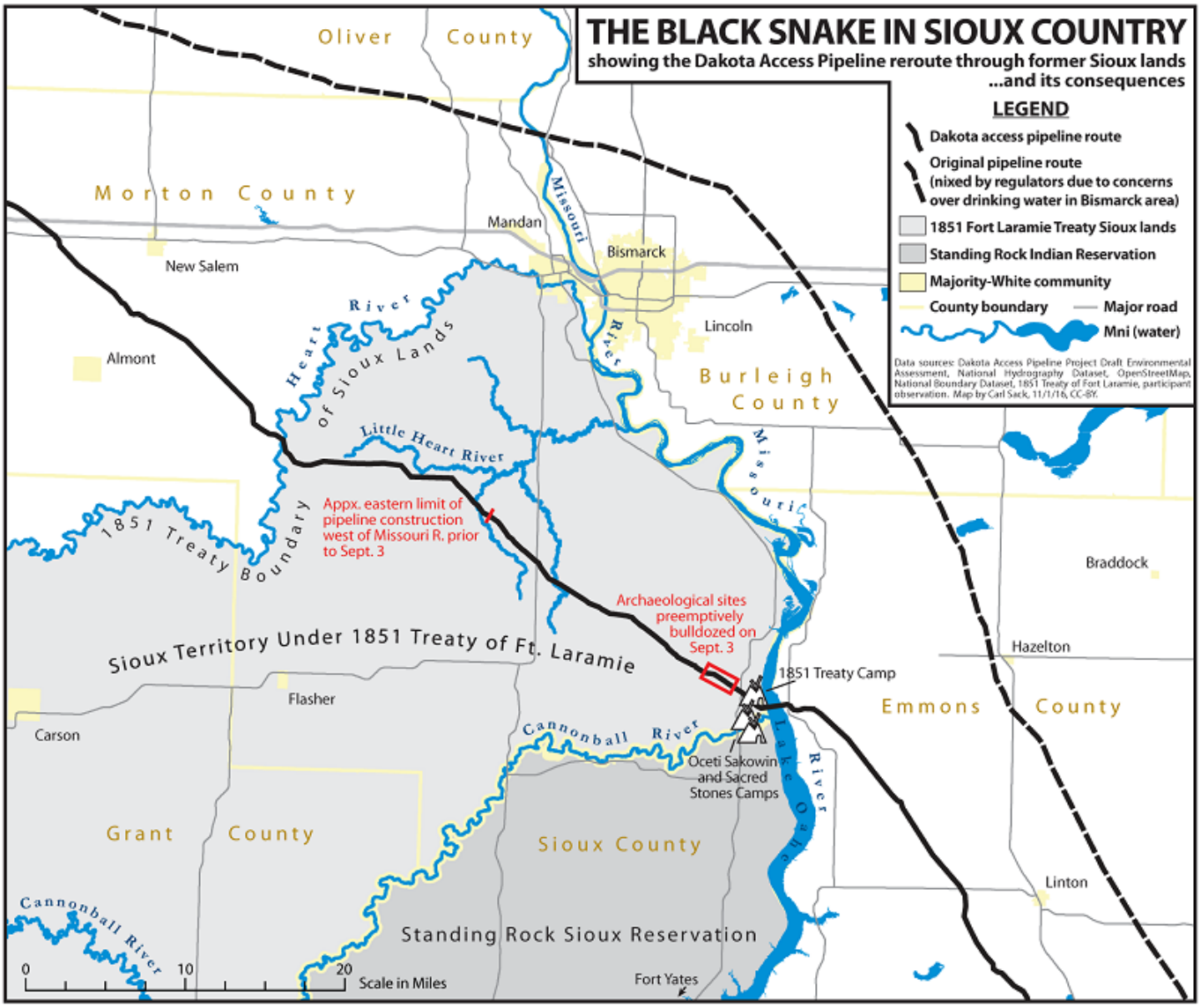


Figure 3. Carl Sack's popular depiction of where the Dakota Access Pipeline and Sioux lands interact. Source: Carl Sack. Used with permission of the author.

Other entries in the Body of Knowledge cover some of this material. For example, for a discussion of Cartography's function as art, see the **Cartography and Art** entry; for additional reading on power and praxis, see **Epistemological Critiques**. The **Additional Resources** listed below attempt to provide further guidance, including a chart of critical cartography and GIS meetings and projects. However, in its own silences and gaps this entry can be "deconstructed" alongside any other text or map and readers are encouraged to turn a critical, reflexive eye both to this piece and to the maps they encounter and produce. The production and experience of maps is an embodied, often joyful experience, but it is one laden with power. The recent and ongoing advent of new mapping technologies and new sources for spatial information mean there are likely more maps being made by more people than ever before. Maps are back, but it is integral to consider what kinds (O'Sullivan et al., 2017). There is a "surprising historical continuity" in the roles maps play in society (Pickles, 2004, p. 12) with more maps used to exploit, control, and outright kill than ever before (Bryan & Wood, 2015; Gregory, 2010). To understand the relations between cartography and power is not simply an exercise in knowledge, but requires a continued engagement in the praxis of making maps which call into question the

dominant paradigms of power and exploitation and how those paradigms are instantiated through maps and map making.

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