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State power and domestic water provision in semi-arid Northwest China: Towards an aleatory political ecology

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ABSTRACT

Between 2005 and 2010 state actors constructed a centralized piped water system to serve 50,000 rural households in a semi-arid region of Northwest China. However, the intended beneficiaries of this project largely chose not to connect the system, and were often ambivalent towards its success. I explain this ambivalence through Foucault's (2007) engagement with the role of the aleatory in the formation of modern state power. The aleatory is those elements of risk, chance and contingency that cannot be fully controlled, but can be calculated and the adverse effects thereof mitigated through what Foucault calls apparatuses of security. Managing the aleatory was a central moment in the emergence of governmentality as a means of exercising state power. Peasants' ambivalence towards centralized piped water originates in the success of a previous state-backed improved rainwater-harvesting program that has significantly reduced peasants' risk of water shortage and placed households in control of risks of water shortage. By improving peasants' ability to cope with drought, rainwater harvesting decentralized power over and knowledge about household water resources. In contrast, piped water has centralized both power over water, and the risk of water shortage in the hands of state actors, but has interacted with local water markets in ways that empower households to reduce the risk of water shortage from both natural sources and the state. The shifting reconfigurations of the risk of water shortages explain how state power has been extended through water management despite the population's selective engagement with piped water.

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Introduction

In 2005, the Anding District Water Bureau (ADWB) began a project to provide piped drinking water to 50,000 rural households in the semi-arid Anding District of Gansu, China. Five years later as the project came towards the targeted completion date, only 31% of the intended beneficiaries had signed up to connect to the piped network, while 41% planned to connect but had not yet connected, primarily for financial reasons. The remaining 28% had no intention of connecting. This conjuncture, that a large number of people in a water scarce region would choose not to connect to running water, can be explained by examining the political ecology of state power and domestic water provision through the lens of Foucault's analysis of the *aleatory* – those events which arises from chance, risk, or contingency. The aleatory formed a central moment in Foucault's (2007) genealogy of the rise of governmentality as a new technology of state power in the modern era and is a helpful tool in our understanding of political ecologies of state power.

In this study I demonstrate that peasant indifference to state backed running water can be more aptly thought of as selective engagement with state development projects and explained through a shifting political economy of risk of domestic water shortages that arose from state environmental governance. By the time the running water project described above began, the ADWB had been governing the risk of domestic water shortage through the decentralized technology of household-based rainwater harvesting for about 10 years. Rainwater harvesting and piped water can be seen as two very different approaches to the expression of state power over the biophysical resource of water, risk of water scarcity, and knowledge surrounding water management. Rainwater harvesting can be understood in terms of what Foucault called *apparatuses of security*, which are fundamentally centrifugal forms of power that gave households greater control over potential water shortages. Piped water, in contrast, concentrated risks of water shortage in a state-run system, and can be understood in terms of juridical and disciplinary forms of power that are fundamentally centripetal.

The politics of drinking water in the Anding District provide one example of governmentality as technology of power based on the application of apparatuses of security to the aleatory. Foucault (2007) argued that apparatuses of security were instruments that enabled governmentality by managing the aleatory through understanding

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the risk of a malady occurring, calculating an acceptable band of impact, and finding tactics to ameliorate but not necessarily eliminate that risk. Foucault contrasted apparatuses of security with previous juridical and disciplinary forms of state power that aimed to entirely eliminate the potential for maladies to arise through either laws or discipline. While juridical and disciplinary forms of power centralized power in the state, apparatuses of security decentralized power throughout the population. In this paper I demonstrate how an engagement with Foucault's understanding of the aleatory might inform our understanding of the role of state power in the political ecology of water. What an analysis of the aleatory from a Foucauldian perspective adds to prior understandings of risk is a fine-grained analysis of how circuits of state power create a calculable political economy of risk surrounding environmental issues. In the case of drinking water, this means examining how the risk of events of water shortage comes to be governed, rather than how water is governed *per se*. In this way, instead of asking as Perreault eloquently has "how decisions about water resources are made, by whom, at what geographical scales, and to whose benefit?" (Perreault, 2008, p. 835), I ask how the shortage and unpredictability of water are governed, by whom, at what scales, and to whose benefit?

The first section of this paper examines the role of the aleatory in Foucault's writing on government as a form of state power, with particular attention to his discussion of grain policy as an example of the aleatory in the emergence of government. I will then introduce the study area and the conditions of domestic water provision prior to state involvement. The following two sections examine two state programs – improved rainwater harvesting and piped drinking water – that have been used to mitigate risk of domestic water shortage. A final section compares these technologies and offer some conclusions about how the aleatory may be used as a framework for understanding the political ecology of the state.

The aleatory and security in Foucault's governmentality

Foucault's notion of governmentality has been widely adopted in many facets of geographic inquiry into state power, including environmental governance (Agrawal, 2005; Birkenholtz, 2009; Rutherford, 2007; Yeh, 2009) and development studies (Li, 2007; Watts, 2003). Governmentality has often been described as the "conduct of conduct" (Li, 2007, p. 5) and is aimed at indirectly creating and shaping the desires of the population to meet the goals of the state. This form of state power stands in relation to previous juridical and disciplinary forms of state power in Foucault's analysis, which acted through either the law or the implicit threat of force to compel subjects to act. Governmental forms of power emerged later than disciplinary and juridical forms of power, and operated along side, rather than replaced, those earlier forms of power. While Foucault defined governmentality in many different ways,¹ I focus here on the role apparatuses of security and the aleatory played in Foucault's working of the concept leading up to his February 1, 1978 governmentality lecture, in which he defined governmentality as "the ensemble formed by institutions, procedures, analyses, and reflections, calculations, and tactics that allow the exercise of this very specific, albeit very complex, power that has the population as its target, political economy as its major form of knowledge, and apparatuses of security as its essential technical instrument" (Foucault, 2007, p. 108). While the connections Foucault identifies between (neo)liberal political economy as a form of knowledge and governmentality have been well documented (see Li, 2007; Yan, 2003), the role of the aleatory in his work has received relatively little attention in later analyses (for exceptions see Alatout, 2013 and Elden, 2007).

One way that Foucault distinguished apparatuses (*dispositifs*) of security from juridical and disciplinary forms of state power is by

their emphasis on probability, cost, and holistic thinking about the aleatory. Judicial and disciplinary forms of power focused on centralizing and absolute control that would prevent adverse events (e.g. a famine, petty theft, miasmas) from occurring. Apparatuses of security, in contrast, operated by reducing the probability of such events and mitigating damages, should they occur. Foucault argued, "the apparatus of security inserts the phenomenon in question [...] within a series of probable events" (Foucault, 2007, p. 7). Instead of a binary model of prohibited and allowed activities, Foucault argued that apparatuses of security establish "an average considered optimal on the one hand, and, on the other, a bandwidth of acceptable that must not be exceeded" (Foucault, 2007, p. 6). Whereas juridical and disciplinary apparatuses focused on eliminating maladies without respect to costs, under apparatuses of security control of risky events was viewed within a wider context of costs of risk reduction. The emphasis on thinking about risks holistically also meant that apparatuses of security viewed a phenomenon within a constellation of other phenomena, and governed by acting on events and phenomena apparently far removed from the object of government. Thus plagues could be governed through city planning, and trade grain shortages through trade (Elden, 2007; Foucault, 2007).

In emphasizing phenomena far removed from the object of power, Foucault made two further observations about apparatuses of security as a form of state power. First, they are largely based on the promotion of *circulation* of objects and ideas. While juridical and disciplinary forms of power emphasize separation, segregation, and isolation of phenomena such that they can be controlled, apparatuses of security encourage interaction between elements in a system. Second, apparatuses of security are fundamentally *centrifugal* forms of power in that they diffuse power away from a central state and work in a diffuse manner. Legal-judicial and disciplinary forms of power are, in contrast, centripetal and concentrate power within the sovereign (Foucault, 2007, p. 45). The distinction between centripetal and centrifugal forms of power will be particularly important in the present case study to explain how water governance interventions have changed control over both the risk of water shortage and knowledge about how to mitigate the risk of water shortage. Mitchell (2002, p. 36) argued that the centralizing state hydraulic paradigm operates less by creating new knowledge about how to manage water resources than by reorganizing and concentrating who controls knowledge of managing water resources. In his case study of Egypt, knowledge of canal irrigation was removed from farmers and placed in the hands of bureaucrats as centralized irrigation systems replaced traditional systems in the 20th century. Reading this history from the perspective of the aleatory, risks surrounding water were also placed in the hands of the state. Removing natural variability and replacing it with risk centralized in state actors.

To illustrate how the aleatory came to be governed through apparatuses of security, Foucault examined policies of the Physiocrats, a group of 18th century French political economists whose policies towards grain shortages he identifies as the first full expression of *government* as a form of state power (Foucault, 2007, p. 116). Prior to the rise of the Physiocrats, food scarcity, a central concern of early modern states, was countered by the state through what Foucault describes as juridical forms of power intended to assure that food shortages could not take place at all (Foucault, 2007, p. 31). The regulatory mechanisms to meet this goal – price controls, regulation of storage, and prohibition of exports – were intended to foreclose the possibility food shortages (Foucault, 2007, p. 32). A clear binary separated that which was allowed and that which was prohibited. Foucault described this system as one that "basically focused on a possible event [famine], an event that could take place, and which one tries to prevent before it becomes a reality" (Foucault, 2007, p. 33).

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