ARTICLES/ARTÍCULOS

Mineral springs, primitive accumulation, and the "new water" in Mexico

Casey Walsh

Abstract: This article explores the process of centralization of water resources by the Mexican nation-state between 1880 and 1940, and, in particular, how the postrevolutionary state facilitated, after 1920, the transference of control over the Topo Chico mineral springs from the local agrarian community to industrial bottling companies. Using archival evidence, it highlights the importance of science and law in this process and argues that centralization must be understood in terms of "primitive accumulation." The article focuses on hot mineral springs, which provide a privileged window on centralization and primitive accumulation but are largely ignored in the historiography of water.

Keywords: accumulation by dispossession, bathing, bottling, Mexico, mineral springs, state formation, water

> Centralization/federalization is a rupture of local autonomy in the management of productive resources, and water in particular, with "local autonomy" understood not as an attribute of local society in the abstract, but rather the faculty of concrete social groups and authorities to organize the use of resources in accordance with the play of interests present in that context. (Aboites, 1998, p. 14, translation by author)[1]

> "In the history of primitive accumulation, all revolutions are epoch-making that act as levers for the capitalist class in the course of its formation." (Marx, 1867/1990, p. 876)

Introduction

The residents of Congregacion San Bernabe Topo Chico had seen changes before, but nothing quite like the arrival of the bathhouse in 1882 (Fig-

ure 1). This small town near Monterrey, Nuevo Leon, Mexico, was encrusted in a large landholding awarded by the Spanish crown to Captain Lucas González Hidalgo in 1716, and had passed the years tending livestock in the semi-arid expanses of northeastern Mexico. The residents farmed a small cluster of fields irrigated by the waters from two local springs: a hot spring known as *Agua Caliente* and a warm spring called *Ojo Caliente*. A third spring, *La Saca*, issued cold fresh water but only really flowed when it rained. The springwater was scant, hot and carried minerals, but it flowed steadily and didn't hurt their fields. The water was fine for cleaning dishes and houses, and there were, people agreed, therapeutic benefits from drinking and bathing in it. In this semi-arid region of northeastern Mexico, there was never enough springwater for all those who wished to use it, and an effort was made around 1850 to increase the yield of La Saca by building a springhouse with a reservoir. While quarrels over water were everpresent in this dry land, the town made do by managing the resource in a communal fashion that respected the ancestral rights of individuals and their heirs to shares of the water.

Townspeople watched dramatic national and international events pass through the region during the 1800s, such as the independence of Mexico, the civil war between liberals and conservatives, and the invasion of the North Americans of the nearby city of Monterrey, but none of this questioned the control exercised over the springs by the townspeople nor the ways they used their waters. Nor did these earlier events bring such

Figure 1 • Topo Chico Bathhouse. DeGolyer Library, Southern Methodist University, Dallas, Texas. AG1987. 0643

an influx of foreigners to their small town as did the bathhouse. Still, allowing wealthy Americans to rent the spring waters for use in the bathhouse, and the bottling plant that arrived soon after, seemed at first to imply only a temporary detour for the water, which was (except for a relatively tiny amount captured in bottles) recovered after passing through the bathhouse and bottling plant for use in homes and fields. But when, in the 1920s, the postrevolutionary Mexican state intensified its effort to understand, control and utilize the nation's water, a new era dawned in which the springs of Topo Chico came increasingly under control of firms from outside the town, including a subsidiary of the Coca-Cola Company. By 1960, the waters of the Topo Chico springs were no longer utilized when they emerged from the ground but rather were pumped from below the surface into bottling plants, producing sodas and mineral waters. By then, the town of Topo Chico was being engulfed by the city of Monterrey, and the townspeople were more interested in selling their lands than in cultivating them.

Stories like that about Topo Chico are common in Mexico. Historian Luis Aboites (1998) describes a long process between 1880 and 1946, facilitated in some ways by the Mexican Revolution, of expanding national-state control over water resources—what he calls "centralization" or "federalization." This centralization of water resources by the Mexican state and its allies was carried out sometimes through outright force but more often through legal and political mechanisms supported by scientific knowledge. Hydrology and engineering contributed to these changes by identifying and quantifying water sources and vastly increasing availability of the resource through extraction, storage and transfer infrastructures (Wolfe, 2013). New knowledge about water promoted both a generalized sense of optimism about the power of the state to transform society and environment (Aboites, 2003), as well as a wide cultural reconceptualization and revaluation of the liquid: what Aboites calls "new water" (Aboites, 2012).

Mexico's "new water" was part of a long-term global shift in how water is understood, managed and used: a shift from "waters" to "water," in the words of Christopher Hamlin (Hamlin, 2000). Until the rise of modern science and technology around the eighteenth century, water sources were thought of more for their particular and specific qualities than as instances of a homogenous substance. That is to say that there were multiple waters defined in a myriad of ways—salty, ferrous, from rivers, hot, flowing on the north side of the mountain, useful for agriculture, etc.—rather than a single substance with different "impurities." Modern science, following Lavoisier, generated the singular notion of H2O, as well as engineering techniques for capturing and combining the plurality of

waters, and an arithmetic management approach that enabled centralized political actors to govern the now homogenous resource at increasingly larger geographical and social scales (Goubert, 1989; Linton, 2010). These ideas about the emergence of modern water fit well with the literature about Mexico (Agostoni, 2003; Romero Lankao, 2010; Samaniego, 2006; Tortolero, 2000; Vitz 2012; Walsh 2008), which identifies a long process of modernization that accelerated during the late nineteenth and twentieth centuries (roughly 1880–1940). The focus on politics and culture embedded in the concept of "new water" is similar to that of much recent historiography of Mexico (Joseph and Nugent, 1994; Vaughn, 1997). Centralization (and decentralization) is such a compelling analytical framework for understanding Mexican history that the editor of an excellent recent volume on the environment casts the entire time period since the Bourbon reforms in these terms (Boyer, 2012).

This article builds upon that literature but argues that the political and cultural analysis of the transformation of water in Mexico is incomplete because centralization and the creation of "new water" should be understood as a key element of a socioeconomic process that Karl Marx called "primitive accumulation" (Marx, 1867/1990, ch. 26). Marx, in *Capital,* developed an argument about the internal workings of capital as an economic system that extracts value, through the wage relation and the accumulation of profits, from workers and transfers it to the owners of the means of production. The systemic nature of this argument begged the question of how labor and land was initially wrested from peasants and made available to capital, and moved Marx to posit, and to document with a reading of the history of Great Britain, an original moment of capital accumulation that was based in force and violence and enabled by the state. Rosa Luxemburg pointed out that Marx's analysis ignored the fact that, when capital encounters internal limits of expansion, it seeks profits by engaging labor and resources in non-capitalist economic systems. From this perspective, rather than a single moment of "original sin" (Marx, 1867, p. 873), primitive accumulation is better seen as an ongoing process of articulation with and extraction from social formations and domains not characterized as capitalist. This viewpoint was further developed in the 1970s and 1980s in a range of discussions among Marxists concerning non-capitalist modes of production, the peasant economy, and the ways these make capitalism possible (Palerm, 1998).

While these discussions petered out in the 1990s, David Harvey recently recovered the idea that "primitive accumulation" is an ongoing and recurrent process and used it to understand the recent wave of privatizations and the plundering of common-pool resources associated with neoliberalism and its state promoters. This framing of the concept of primitive

accumulation is useful for understanding the "centralization" of water resources, such as the Topo Chico hot springs. Capitalism was already thriving in its industrial form in northern Mexico in the 1880s, so the wresting of the spring waters from the townspeople was not the setting for the birth of capitalism but rather the generation of a new arena for its ongoing reproduction and expansion. Neither was this the first time the springs had been taken, by force and with the help of political actors, from those who were accustomed to using them; the history of colonization of northern Mexico, like that of the western United States, is one of extermination and expropriation of native populations. Finally, the story of primitive accumulation told in this article is not one "written in the annals of mankind in letters of blood and fire," as Marx put it (1867/1990, p. 875), but rather one which features incremental struggles and tectonic shifts in the terrain of law, politics and cultural ideas about water itself.

In Mexico during the late nineteenth century, the state claimed jurisdiction over much of the water in the country, and, at the same time, provided access to that same water through newly created infrastructural, legal, and political channels. This process accelerated after the Mexican Revolution (1910–1920), when the postrevolutionary state made irrigated agriculture a central part of its strategy of governance and development. Agriculture after the revolution had an important "social" sector, which was organized into social collectivities (*ejidos* and *colonias agricolas*) producing with public lands and credit. Most irrigated agriculture in the "social" sector was not peasant production (and certainly not socialism or communism) but rather a form of state capitalism. In fact, for much of the twentieth century, social agriculture in northern Mexico was largely dedicated to producing cotton for export, making healthy profits both for the Mexican state and for the international firms that financed and marketed the crop (Aboites, 2013; Almaraz & Cerutti, 2013; Walsh, 2008). As a result of the expansion of state control and capitalist uses of water, communities were dispossessed of liquid that had been previously under their control.

I make this argument about water, state formation and primitive accumulation by turning to tiny and peculiar water sources—hot, mineral springs—that do not attract much attention from historians, apart from some research on their medical uses (Coley, 1979; Jennings, 2006; Porter, 1990; Walton, 2012). This relative lack of interest in hot mineral springs perhaps derives from the fact that they are primarily used for bathing and drinking and are, therefore, invisible to most water historians who follow Karl Wittfogel (1957) in analyzing the connections between irrigated agriculture, state formation and social complexity (see Walsh, 2012). But while hot mineral springs may not seem terribly important from this per-

spective, we can gain a clearer picture of how the state deployed a combination of legal reforms and the science of hydrology to gradually seize control of the Topo Chico spring waters from the hands of peasants and ranchers and redirect them to capitalist enterprise. The waters were first used for public baths catering to tourists and then by industrial bottling companies. Despite the control held by local actors over these waters since time immemorial, the federal government defined the springwaters as national waters, and, amid the protests of locals and the state government of Nuevo León, proceeded to allocate concessions of water for the private bathhouse and, more importantly, bottling companies. With the federal government smoothing the road through legal–political centralization, the Coca-Cola Company invested in the bottling enterprises set up at the springs, propelling the eventual displacement of all other social actors and uses. It was new water for a new, industrial, capitalist mode of production.

Mineral springs, bathing and drinking

The creation of new water in Mexico and the southwestern United States transformed two social activities—bathing and drinking—that depended on hot mineral springs. The western United States, taken from Mexico by force in 1848, were an especially attractive destination for urbanites from the Eastern Seaboard who traveled seeking the health benefits they perceived would be gained from fresh air, wide-open spaces, and a more immediate interaction with the natural world (Baur, 1959; Chittenden, 1884). Mineral springs, long valued for their therapeutic dimensions, were among the first places claimed, settled and developed by the newcomers. In Texas, for example, hundreds of mineral spring resorts enjoyed a boom between 1860 and 1920, peaking in popularity around 1900 (Valenza, 2000, pp. 34–43).

The expansion of mineral and hot springs resorts across the southwestern United States was facilitated by railroad companies, which often developed the hot springs on their newly constructed lines. These same railroads connected with routes in Mexico completed in the 1880s, enabling tourists to travel from the springs of Texas all the way to Mexico City (Coatsworth, 1981). Mexican hot and mineral springs were important destinations for Americans seeking cures, as well as others who were just seeing the sights (Jones, 1967). The city and state of Aguascalientes—named after the famous hot waters located there—attracted the interest of almost everyone riding the train from the northern border down to Mexico City, and traveler accounts from the time go into detail about the

bathhouses and bathers of that city (Ballou, 1890; Bates, 1887; Blake and Sullivan, 1888; Ford, 1893; Hackson, 1890; Margati, 1885; Smith, 1889). In the border state of Chihuahua, the Atchison, Topeka and Santa Fe Company built a connection to the town of Santa Rosalia in order to deliver tourists to the hot springs there (Ober, 1884, pp. 565, 625), and various efforts were made between 1900 and 1932 to develop the hot springs just south of the border in San Antonio, Chihuahua in order to lure *gringo* tourists.[2]

The encroachment on hot springs in northern Mexico by new actors and ideas was especially notable in the town of Topo Chico. Attracted by the prospect of earning monthly rent, in 1882, the town of San Bernabe Topo Chico signed a contract with Emma Slayden that guaranteed her the use of water from the hot springs for forty years. Four years later, AC Schryer of Waco, Texas, took over the contract and hired community members to build a bathhouse that used water from the Agua Caliente spring, thus creating the Compañía de Baños Topo Chico. In 1887, Slayden built a mule-drawn railroad from Monterrey to the Topo Chico springs, financed by capital from New York.[3] Admission to the baths was 50 centavos, and a few years later, the newly created bottling company of Topo Chico contracted the rights to six liters per second of the spring flow from the community of Topo Chico.[4] In 1893, another foreigner, E. R. Glass, built the Hotel Marmol across the street from the bathhouse to cater to the new influx of visitors to the hot springs, by then known regionally, nationally and internationally for their curative properties.[5] So widely known were the springs that J. H. Blackburn, a doctor from Texas searching for a cure for his gout and diabetes, included Topo Chico in an itinerary that also included far-flung mineral water health resorts such Lithia Springs, Virginia and Hot Springs, Arkansas (Valenza, 2000, p. 41).[6]

Mineral waters had been bottled, marketed and consumed at a distance at least since the middle ages in Europe, both for their purported curative properties and simply because they were relatively clean sources of drinking water (Kauffman, 1959). Artificially carbonated beverages became very popular in the United States during the nineteenth century, and, like tonic water (with quinine added) or the famous Coca-Cola, these waters were often sold and bought as medicines that mimicked—or purported to mimick—the qualities and uses of naturally occurring mineral waters. These new "soda" waters, or "sodas," were usually mixed with flavored syrups and sold at pharmacy counters. With the invention of the metal bottle cap in the 1890s, large amounts of both naturally occurring and fabricated mineral waters began to be sold in small bottles (Riley, 1972). In Mexico, for example, water from the famous mineral springs of

Tehuacán, Mexico was bottled since the colonial period, but, in the 1890s, the construction of railroads and the boom in the medical uses of mineral waters coincided to create new markets for them (Bringas, 2010, pp. 335–340).

After 1900, more and more Topo Chico spring water found its way into bottles. The waters of Topo Chico had achieved such fame during the last decades of the nineteenth century that the American, who by that time held the concession for the Topo Chico baths, Julio (Jules) Randle began bottling the mineral water under the brand name of Topo Chico for distribution to visitors and inhabitants of the region.[7] In 1900, the community of Topo Chico signed a contract giving permission to Emma Slayden to build a bottling plant, although still in 1902, a traveler noted that "the springs themselves stand in a shady grove" and were not captured by a bottling plant at their origin (Morris, 1902, p. 46). Emilio Hellión, a Frenchman residing in Monterrey, bought into the Topo Chico bottling company, and, together with Manuel Cantu Treviño, secured capital from the New York firm Wilson and Company to expand and consolidate the operation.[8] At the same time, Pedro Treviño, one of San Bernabé Topo Chico's wealthy residents and owner of the land surrounding the La Saca spring, built a spring house and factory for ice and soda, investing upwards of 100,000 pesos. Much of this money likely came from outside investors.

As uses for the spring waters diversified and intensified, conflicts emerged. Treviño's development of the La Saca spring was opposed by members of the community, and, as a result of their complaints, an expert in hydrology was sent by the city government of Monterrey to investigate. Because the hydrologist reported that Trevino had dug a well and that the spring water did not flow beyond his property, the city government declared Treviño to be the lawful owner of the spring. This first conflict over the springs set the tone for the competing social uses and politics of these springs during the next forty years, which would continue to be characterized by divisions within the community and a major role for government technicians and lawyers in determining the nature of the water resources and transferring ownership or use of them to businessmen from outside.[9]

Hydrology, law and state formation in Mexico

The conflicts over mineral springs that emerged in northern Mexico due to the arrival of new users and uses were part of the vast social upheaval of the Mexican Revolution (1910–1920). The Revolution has been discussed at great length by historians who chronicle the complex political maneuvers

of its many groups and leaders (Knight, 1985). Seen from another perspective, the overall effect of the Revolution was to change the composition and organization of economy, society and culture in Mexico, and, while it should not be considered simply a "bourgeois" revolution (Cordova, 1989; Gilly, 1971), it did mark a transition to a more consolidated form of capitalism in which the peasantry was increasingly articulated to and displaced by capitalist forms of industry and agriculture (Hart, 2002). The centralization of water, and the primitive accumulation this represented, played an important tole in that reshaping and consolidation.

The revolution unleashed a process of revindication and redistribution, driven by popular actors, in which land and water was claimed by those who had none and taken from those who did, often to address historic injustices. Until quite recently, water has been for people around the world a common-pool resource, and this is true in Mexico both before and after the Revolution. The postrevolutionary state incorporated popular concepts of common property of land and water into the new Constitution of 1917. Who, then, had the authority to designate the legitimate users of that common property?

The answer involved issues of scale and science. Mexican water administration was organized legally by a principle of geographical scale. Water that did not flow beyond the boundaries of a single property was considered part of that property. Water that flowed across different properties but not across a state's borders was under the jurisdiction of that state's government. That which crossed state lines, such as the water carried by the Salado or San Juan rivers and their tributaries, was national; if a river drained into the Río Bravo (known as the Rio Grande in the United States), it was water governed by international treaties as well. All national water was the common property of the nation to be administered by the federal government, and, during the revolutionary and postrevolutionary period, water, like land, was the object of nationalization and redistribution by the federal government. These were scales of government, and obviously political.

As bathing and bottling grew in popularity at the end of the nineteenth century, information was needed to govern competition over mineral springs. The emergent science of hydrology was charged with the task of determining if water was national, state or private. During the rule of Porfirio Diaz (1880–1911), the government made an effort to map the Mexican countryside and distributed lands to surveying companies to promote this activity (Holden, 1994). Despite these actions, small water sources, such as hot springs, fell beyond or below the gaze of the state. For example, in 1904, residents of Las Cabras Chihuahua asked the Secretary of Agriculture and Development for rights to build a bathhouse at

some nearby hot springs, but the federal government could not even find those hot springs on their map.[10] In the case of a similar request for access to the hot springs near Catemaco Veracruz, the Ministry of Public Works (Secretaría de Obras Publicas) did not possess a map of the area, let alone the springs, and could not acquire one from any other branch of government.[11] Even when the government's own maps registered hot springs and they were located on federal lands, officials usually had no information about spring flow, temperature, established uses, or anything else.

As the nineteenth century wound to a close, hot springs such as those in Topo Chico Nuevo Leon attracted the attention of regional and international capital, and their status as a community resource was challenged, eroded and changed. In 1898 ,the national government declared the waters of the drainage where the Topo Chico springs were located—the Arroyo Topo Chico—to be national waters because they led to the Santa Catarina River, which eventually drained into the Rio Bravo.[12] This was confirmed, at least on paper, by a map from 1904, although the community of Topo Chico continued to dispose of "its" hot springs in the ways established during the previous centuries: for domestic use and gardens, for animals, and for bathing. The return to concessioning the waters to bottling and bath companies did not immediately put into question community members' control over the resource.[13] During the Revolution, popular ideas about "land and liberty" reinforced local control of the hot springs. In 1915, a constitution was written that enshrined the radical liberal idea that the land should belong to those who worked it. In 1918, with local agrarian rebels in charge of the bathhouse, the waters of the drainage in which the Topo Chico hot springs were located were ruled to be private rather than national waters. This ruling validated the existing contract between the Community of San Bernabe Topo Chico and the bottling and bath companies and short-circuited the possibility that the waters would be nationalized and redistributed by the federal government.[14]

Nature in northern Mexico did not submit readily to the scientists and legal scholars, for the arid landscape did not conform to legal and hydrological concepts, such as "river." Smaller rivers and streams often only flowed during the rainy season, and small drainages (*arroyos*), such as that of Topo Chico, would only carry water during storms. The same maps that failed to register hot springs depicted rivers that were in reality simply drainages that hardly ever carried surface water. Furthermore, water laws written in 1884, before the rise of hydrological science, did not contemplate the connections between the surface waters and subsoil waters (Wolfe, 2013). The waters of hot springs, which emerge from deep below the surface of the Earth, usually have little to do with those that run in drainages either as subsoil water or surface water.

New water and primitive accumulation in Topo Chico

Law and science supported the slow and lengthy process of primitive accumulation and the transition from peasant uses of water to capitalist uses. In Topo Chico, a local spring that in 1880 supported diverse economic activities of peasant households, was, by 1950, completely utilized by one the biggest industrial bottling companies in Mexico and the world. Is this "centralization?" Or is there another, economic process at work? Marx's idea of primitive accumulation (1867/1990, ch. 26), recently rehabilitated by David Harvey (2003), is useful in understanding this history. Marx went to great lengths to analyze how capital perpetuated itself by extracting value from proletarian labor through commodity production. The endless reproduction of capital is constantly challenged from within, however, by the tendency for rates of profit to fall. A remedy for this crisis is found, as Rosa Luxemburg astutely pointed out, in the domains of human life that fall outside the capitalist productive process: peasant labor; resources held in common, markets for artisanal products, and the like (Luxemburg, 1964; Palerm, 1998, pp. 71–90). Marx portrays this process as an "original sin" present at the conception of capitalism, but as Luxemburg argues, this form of accumulation is not a one-off event but rather an ongoing process in which capital constantly expands into and orders new domains of human life, most often deploying agencies of the state to wrest control over those domains from the actors who previously managed them. The concept of "centralization" fails to capture the complexity of this socioeconomic process of "accumulation by dispossession" (Harvey, 2003) as it unfolds in particular social fields.

Accumulation by dispossession was carried along quite visibly in Mexico by the long process of the Revolution (1910–1920) and postrevolutionary state formation. The armies and leaders of this conflict formed constantly shifting alliances, and communities were divided along these lines. In Topo Chico, the revolution fractured existing agreements about the legitimate uses and owners of the spring waters, and a group of rebels rose in opposition to those in the community who dominated the land and water and controlled the town government. As the revolutionary movement across northern Mexico died down and the victorious generals began the process of rebuilding the Mexican state, the local rebels of Topo Chico adopted the politics of agrarian reform (*agrarismo*), pressing the federal government to nationalize land and water held by the wealthier members of the community and award it to them as a collective farm, or *ejido.*

The social upheaval wrought important changes to the bathing and bottling businesses that used Topo Chico spring water. Pedro Treviño's ice and soda factory, which utilized the La Saca spring, was abandoned,

and the foreign investors in the Topo Chico bottling company fled, selling their stakes to regional businessmen Manuel Barragán and Leonides Páez. The Compañía de Baños met the same fate when the national and international tourism that had supported the bathhouse and hotel ceased completely because of the violence. In 1921, in one of its first actions, the newly constituted federal government's health board—the Consejo Superior de Salubridad—closed the baths citing the unhygienic state of the neglected facilities.

In 1922, the contract between the town of San Bernabe Topo Chico (still the holder of legal rights to the hot springs water) and the Compañía de Baños expired.[15] Without a contract for the waters, without a bathhouse in condition to receive customers, and without customers brave enough visit Topo Chico, the Compañía de Baños went out of business and the installations were taken over by *agraristas.* They, however, had no means with which to improve or maintain the infrastructure of the baths, and soon "the roofs were falling and the tubs, walls and pipes were so deteriorated and filthy that very few people dared use them."[16] In the turmoil, the town government asserted itself, taking over the administration of the hot springs water "by the unanimous will of the neighbors and community members who live in Topo Chico."[17] In an effort to force the bottling company to agree to a new contract, the town government cut off water to the bottling plant and took out advertisements in the newspapers of Monterrey accusing the company of bottling regular water, not mineral water.[18] Soon after, the town government delivered a petition to the federal government in which it claimed to be the rightful owner of the mineral spring water and asked that it be returned. In 1924, the town reopened the baths under its own control after correcting the problems cited by Salubridad.[19]

The struggle over land and water in Topo Chico proceeded in fits and starts, and different levels of government intervened on behalf of different actors. To deal with the agrarista uprising, in December of 1923, the governor of the state of Nuevo Leon orchestrated a land transfer outside of the federal agrarian reform process aimed at establishing peace between the competing factions in the town; 1,444 hectares of land acquired by large landowners in the mid-nineteenth century was transferred to the *agraristas.* This agreement established two formal and opposed political institutions in the town: the newly created *ejido* and its members, and the *Comite Particular Adminsitrativo* (Private Administrative Committee), which represented the rest of the town of Topo Chico. But before this agreement was signed into state law in March 1925, the Comite Particular Administrativo submitted a parallel request to the federal government's Agrarian Reform Comission (CNA) for the return of those same lands, claiming that the community once owned them. The local branch of the federal government

approved the request, but it was rejected at the state level by the governor of Nuevo Leon, who had already brokered a land deal. Pressured by the federal government, the state government eventually approved the creation of an *ejido* as a new concession of land rather than a return of land. In August of 1926, President Plutarco Elias Calles emitted a resolution awarding that *ejido,* annulling the State of Nuevo Leon's 1923 agreement.[20] This award of land rejected the community's ancestral claim to the resource and reinforced the federal government's position that it was the only legitimate owner and administrator of national land and water.

Once the land was delivered, the struggle turned to water and was fought on the terrain of law and hydrology. The central problem was that there was not enough water to irrigate the newly distributed lands. The Presidential Resolution of 1926 parceled out 25 hectares of gardens and orchards near the town and 2 liters per second of water from the hot springs for domestic uses and for livestock, but did not provide the 7.9 liters per second of water needed to irrigate those 25 hectares. A bigger problem, however, was that the resolution also failed to provide the 73.2 liters per second of water needed to irrigate another 1,444 hectares of previously unirrigated land that were also part of the distribution.[21] With the hope of resolving this problem, the community of Topo Chico petitioned the Secretary of Agriculture to declare the waters of the Arroyo Topo Chico to be national, not private, in order to lodge a claim to them through the federal government's agrarian reform process.[22] In doing this, the community acknowledged the legitimacy of the federal government's position that it was the rightful agent for governing the resource. The Secretary of Agriculture sent an engineer to make a study (the second) of the springs and the Arroyo Topo Chico into which they drained, and, in June of 1927, the waters of the Arroyo, including the spring waters, were declared national property because, the engineer argued, the waters formed part of a drainage that eventually led to the Rio Bravo.[23] Once placed under control of the federal government, the issue turned to whom the federal government would award their use.

When the hot springs waters were nationalized, the local town government of San Bernabe Topo Chico immediately took over the bathhouse. Its leader, Celso Cepeda, asked permission from the federal government to "make use of the hot water for the public baths that [the town] will refurbish using money from the agrarian bank."[24] The town government then squared off against the Compañía de Baños Topo Chico, accusing them of never paying the monthly charge of 100 pesos that was stipulated in the contract. The Compañía countered with the opposite claim: that it had been paying the 100 pesos to Cepeda for some time.[25] Then, in March 1928, the *ejidatarios* of Topo Chico occupied the bathhouse.[26] The

state government of Nuevo Leon immediately intervened, ordering the congregation to return the facilities to J. T. Garza, proprietor of the Compañía de Baños.[27] The state government declared that the *ejidatarios* did not have permission to use the waters for industrial purposes, and the Compañía de Baños could therefore continue to use them for bathing and bottling.[28] This decision was based on the assertion that the hot springs were local waters rather than federal waters.[29] The federal government objected strongly to the state of Nuevo Leon that "the declaration of Arroyo Topo Chico as national waters would not be reconsidered."[30]

The state government of Nuevo Leon continued to assert its right to govern the Topo Chico springs and the conflicts surrounding them, brokering a deal between the town of Topo Chico and the Compañía de Baños de Topo Chico and its operator, J. T. Garza. In a 20-year contract signed in May of 1928, the town was declared owner of the bathhouse, with its baths and offices, as well as a nearby park and bandshell and various other properties. These facilities were to be rented by the Compañía de Baños Topo Chico for 100 pesos a month. The water of the hot springs was to be used only for the bathhouse and then sent to a tank where the town could distribute them for irrigation. Garza was obliged to invest 20,000 pesos in repairs over the next five years.[31] The town made a separate, 40-year (1928–1968) contract with Manuel Barragán for the use of the waters by the bottling company—the Compañía de Aguas Gaseosas.[32] The *ejidatarios* of the Topo Chico were told to relinquish their hold on the bathhouse and spring waters and that there was also no water in the Rio Santa Catarina to irrigate their new fields.[33] The most they got was permission from the Secretary of Agriculture and Development to build, at their own cost, a horizontal filtration well (*galeria filtrante*) to collect the water.[34] They made an effort to secure an industrial concession for the hot springs water, presenting a map from 1904 that showed the hot springs were part of the Rio Santa Catarina, and thus national waters they could solicit.[35] Bathhouse operator J. T. Garza defended his access to the water with a municipal map of Monterrey that showed the Arroyo Topo Chico petering out in the irrigated fields of San Nicolas, without arriving to the Rio Santa Catarina. It was not federal water, he concluded, and therefore ownership by the town, and rent by the bathhouse and bottling companies, should stand.[36]

For most of the 1920s, both Nuevo Leon and the federal government of Mexico asserted control over the springs using scientific arguments about the origin and destination of the waters. The contracts brokered by the state government of Nuevo Leon were based on rights and concessions that had yet to be established by the federal government, which by then considered itself the proprietor of the water. In order to award these concessions and regularize the contracted uses of the water, the federal

Secretary of Agriculture and Development sought more precise scientific data about the springs and its users, and sent an engineer to conduct a third study of the springs. Ramon Aviles visited Topo Chico in August of 1929. He spoke with different parties using the hot springs, took measurements of streamflow and photographs of the installations, drew up maps of the site, and wrote a detailed report. He concluded that both the Ojo Caliente and the Los Baños (Agua Caliente) hot springs were permanent, and the Las Sacas flowed only when it rained. The Los Baños (Agua Caliente) hot spring was used by the bathhouse, the bottling company, and the townspeople for domestic chores, while Ojo Caliente and La Saca were used to irrigate gardens and orchards (Figures 2 & 3). All the water from

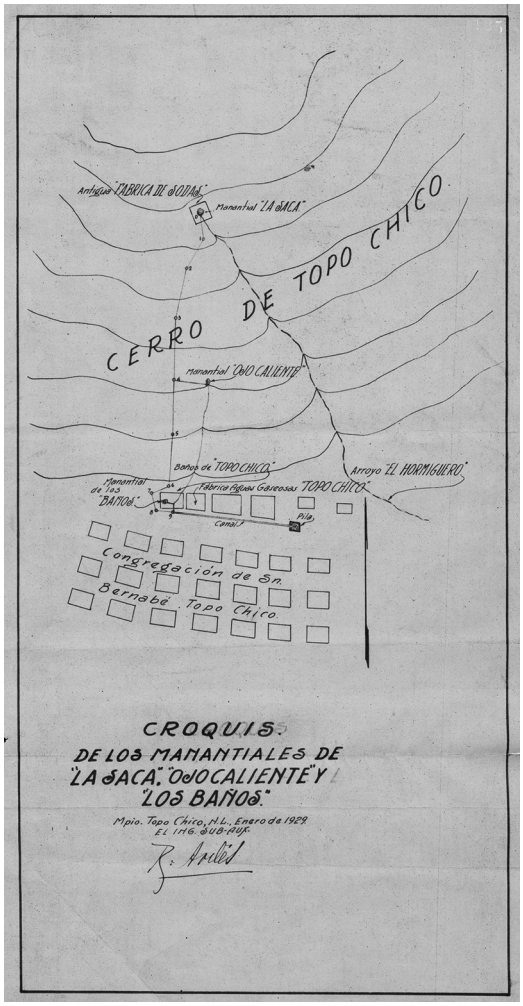

Figure 2 • *Croquis de los Manantiales.* AHA, AN, caja 22, expediente 5735

Figure 3 • *Manantial Agua Caliente.* AHA, AN, caja 463, expediente 4893

the three sources was used completely.[37] Aviles' report concluded that the Topo Chico Springs were national waters and the 1926 Presidential Declaration of water rights should stand. The town had rights by presidential decree to 2 liters per second of the Los Banos (Agua Caliente) hot spring for domestic uses. In addition, the engineer assigned 7.92 liters persecond of the water divided among La Saca, Ojo Caliente and Los Baños to irrigate the 25 hectares of orchards and fields for which there was previously no water assigned.

With the submission of Aviles' report, any water use that was not formalized and recognized by the federal government's Secretary of Agriculture was illegal, including customary uses that had been practiced by townspeople for generations. Furthermore, with nationalization of the water confirmed by the report, whatever water not assigned by the federal government was up for grabs through a process of concession. Mexican water law held that rights to nationalized water should be awarded to those who had established continous, peaceful use of that water during the previous five years. According to this formulation, both the town of San Bernabe Topo Chico and the Companies could lay claim to the liquid: the water passed through the bottling plant and baths, and then the community used it. Except for the water that ended up inside the bottles, the bathhouse and bottling plant made "non-consuptive" use of the liquid and handed it over to the community for consumption in domestic uses and agriculture.

The nationalization of the Topo Chico springs directly benefitted the companies, and facilitated the long-term shift in control from peasants

to industrial capitalists. Shortly after the 1929 report was submitted, the Ministry of Agriculture alerted the bottling and bath companies that they would need to solicit a water concession or confirmation of existing use or their access to the springwater would be suspended.[38] In the same month that the engineer made his survey, the Compañía Topo Chico filed a request that the government recognize its rights to the springwater, claiming that it had used the medicinal waters in the bathhouse since 1886.[39] For its part, the town of San Bernabe Topo Chico filed a request for a new concession of waters, arguing that it wished to expand the bathhouse to expand curative services to a "public in pain."[40] At that moment, however, the Ministry of Agriculture and Development overrode the deal brokered by the state of Nuevo Leon that gave the town the property rights to the bathhouse. The federal government ruled that the owner of the bathhouse was Garza, not the town, and that, furthermore, he had "adquired the rights to the use of those waters."[41] Also, a concession of 1.396 LPS of water from all three springs was awarded to the bottling company, and it was advised that it should no longer pay the 100 pesos a month to the town for the use of the water, for the town was no longer the owner.[42] The town, seeing the water of the hot springs slip from its hands, demanded its return, accusing the governor of Nuevo Leon of arbitrarily given water away to "outsiders."[43]

The consolidation of capital's control over the Topo Chico springs in the form of bathing and bottling moved steadily forward, despite, and even because of, the revolutionary turmoil and political uncertainties of the teens and early twenties. The reconstruction and strengthening of the nation-state in Mexico carried with it the nationalization of property rights for land and water and, in cases such as Topo Chico, the state facilitated the primitive accumulation of resources by capitalist firms. The Topo Chico bottling company actually expanded its offerings during the revolutionary years to include flavored sodas such as ginger ale ("Yinyereil") and an apple drink called "Eva." It also improved its factory by investing in a metal bottle capping machine.[44] And, in 1926, the company became the first bottler in Mexico to produce Coca-Cola marking a consolidation of the industrial use of the Topo Chico hot spring[45] (Figure 4).

By 1930, after years of neglect, the Compañía de Baños had rehabilitated the bathhouse by laying down tiles and providing mattresses and rugs, and had spruced up the town park, which had been used by the *agrarista* rebels to graze their horses. Once fixed, a stream of visitors—including foreigners—returned to the baths, lured by their medicinal qualities.[46] The Consejo Superior de Salubridad monitored the installations, to assure cleanliness and attractiveness for the tourists to the springs, and told the community to scrub the tank where the residual waters from the

Figure 4 • *Embotelladora Topo Chico.* AHA, AN, caja 463, expediente 4893

bottling and bathhouse collected before being sent to the fields.[47] Bitter residents replied that the only reason it was dirty was because the bottling plant dumped syrups, soap, label glue and machine oil into it, and demanded that their water be delivered to them first and to the bottling plant later.[48] Having prevailed in defining the nature the spring waters, the engineers of the Ministry of Agriculture became righteously indignant, labeling the complaints "morally wrong" and calling the townspeople liars.[49] The *ejidatarios,* for their part, concentrated their energy on fighting with agricultural producers from neighboring communities for the water of the Rio Santa Caterina.[50]

During the next decade, the social use of the Topo Chico Hot Springs would narrow even further, as the bathhouse closed due to fading public interest and the bottling industry consolidated its hold over the water. In 1930, the bottling plant of the Compañía Topo Chico entered another period of expansion and began to export products by road and rail to cities in the states of Nuevo Leon, Tamaulipas and Coahuila. The company substituted the older brand of ginger ale (Yinyereil) with a new product called Ginger Ale Topo Club.[51] The Coca-Cola Company strengthened its relationship with the Compañía Embotelladora Topo Chico, and its products, introduced in 1926, led the growth. Attracted by the success of the Topo Chico Company, a competing bottling firm pressured the federal government to reassess spring flows once again (the fourth time), and

then grabbed what remained of the unassigned water before it arrived to the townspeople, who were the final users. Local control of the water for agriculture drinking and bathing was no more. Like most cities in Mexico, Monterrey grew rapidly after 1940, incorporating neighboring communities and their lands, and the community of San Bernabé Topo Chico was integrated into the urban sprawl in the 1960s.

Conclusions

After 1920, the postrevolutionary state was remarkably successful in consolidating the expanded reproduction of capital in agriculture as well as industry. This successful centralization of the ownership and management of water derived, as we have seen in this article, from its ability to deploy law, bureaucratic procedure, and scientific knowledge. The transfer of the waters of Topo Chico from some social uses and groups to others was carried out on the terrain of politics and culture, but it contributed to a fundamentally economic process that can be understood as a round of primitive accumulation. This water grab, which occurred in diverse local contexts across Mexico, set the conditions for the burst of economic growth during the postwar years (1940–1970) known as the "Mexican miracle" (Carmona, 1973). Rents from agricultural commodities grown with "national" water ended up back in state coffers through mechanisms of redistribution, such as taxes, or the credit system of the state-controlled banking sector created in the 1930s (Escobar Toledo, 1990), and this accumulated capital was plowed by the state back into its own agricultural and industrial enterprises, as well as social infrastructure, such as health care and education.

As we move further into the twenty-first century, the new water imposed by the state through centralization and primitive accumulation is looking increasingly like a bad deal that needs to be reconsidered. The conservation impetus generated by hydrological science has so far been unable to gain traction against the overriding role of resource use for accumulation. The key social promise of the new water—economic growth and reduced environmental vulnerability through increased and stable supply—has been abandoned in favor of demand reduction strategies aimed at managing scarcity. Agriculturalists across Mexico as well as inhabitants of Mexico City, Monterrey, Guanajuato and other cities suffer through water shortages that lay bare the pretenses of the new water. The unequal nature of access to the resource as well as to the rents derived from it is becoming more obvious as problems of quantity and quality mount.

Primitive accumulation and imposed dependency on state infrastructure have ruptured cultural and ecological connections to local water sources and withered autonomous social organizations that once managed the resource. The response by the exhausted state has been to abandon its developmental stewardship role, and, through another wave of primitive accumulation, pass many of its managerial functions to private water firms. Faced with these problems, the history of hot springs can lay bare the overarching economic impetus behind the politics and culture of water management in the twentieth century and perhaps help us remember and reimagine our relationships to water and to each other.

ACKNOWLEDGMENT

Funding for this research was generously provided by the Academic Senate of the University of California at Santa Barbara, and by the Universidad Iberoamericana, Mexico City.

CASEY WALSH is Associate Professor of Anthropology at the University of California, Santa Barbara. His research centers on the anthropological political economy of the Mexico–U.S. borderlands and the ways in which water, land and labor have been organized to produce commodities in that region. He is the author of a book, *Building the Borderlands: A Transnational History of Irrigated Cotton along the Mexico-Texas Border* (Texas A&M University Press, 2008) and recent articles in *Ecosphere*, *Southern Rural Sociology* and *Human Organization.* He edits the *Journal of Political Ecology* and is currently writing a book about the economic and cultural history of mineral springs in Mexico.

NOTES

1. "*…la centralizacion/federalizacion es ruptura de autonomia local en el manejo de los recursos productivos en general y del agua en particular, entendiendo por "autonomía local" no una atribución de una sociedad local abstracta, sino la facultad de grupos sociales concretos y autoridades igualmente concretas para organizar la forma de usar los recursos productivos de acuerdo con el juego de intereses presentes*." (Aboites, 1998, p. 14)
2. Archivo Historico del Agua, Mexico (AHA), Aguas Superficiales (AS), Caja 4581, Expediente 60978; AHA, AS, Caja 4359, Expediente 57850, Servicio Consular Mexicano, Oficina de Presidio Texas, "Informe Comercial" (March, 1932).
3. AHA, Aguas Nacionales (AN) caja 1195; expediente 16636, Contract, Comunidad SBTC and Slayden (8/9/1900). Retrieved from http://www.tramz.com/mx/mo/mo.html

4. AHA, AS, caja 1195, expediente 16636, (20/8/29); AHA, AS, caja 1196, expediente 16641, Garza to Secretaria de Agriculture y Fomento (SAF), (4/12/30).
5. http://www.topochico.com/quien2.html. Retrieved 2/17/2012.
6. Cited in "Mineral Wells of Texas," *Texas Health Journal* 5(12), June 1893, p. 315.
7. http://www.topochico.com/quien2.html. Retrieved 2/17/2012. Randle was also the owner of Monterrey's tramway system (Mora-Torres, 2001, p. 123).
8. http://www.topochico.com/lideraz.html. Retrieved 2/17/2012.
9. AHA, AN, caja 469, expediente 4947, Carlota Zambrano to SAF (8/4/31); AHA, AN, caja 469, expediente 4947, Alfonso de la Torre to SAF (21/5/31); AHA, AS, caja 4905, expediente 68434, Pedro Treviño to SAF (12 0ct 1903); AHA, AN, caja 519, expediente 5715, "Informe" (28 agosto 1903).
10. AHA, AN, caja 4581; expediente 60978.
11. AHA, AS; caja 4519; expediente 69882, SAF to Secretaria de Obras Publicas (SCOP) (29 May 1911).
12. AHA, AS, caja 4905, expediente 68434, SCOP to SAF, (13 marzo 1909).
13. AHA, AS, caja 1655, expediente 24274, (28 dic 1926).
14. AHA, AS, caja 271, expediente 6547, Celso Cepeda to SAF (8/1/30).
15. AHA, AS, caja 271, expediente 6547, Celso Cepeda to SAF (8/1/30); AHA, AS, caja 1195, expediente 16636, "Solicitud de Dotacion de Derechos de Agua Caliente y Ojo Caliente" (23/10/29).
16. AHA, AN, caja 522, expediente 5735, "Informe" (7/24/30).
17. AHA, AS, caja 271, expediente 6547, Celso Cepeda to SAF (8/1/30).
18. AHA, AS; caja 271, expediente 6547, Celso Cepeda to SAF (9/1/30).
19. AHA, AS, caja 1665, expediente 24274, Comision Nacional Agraria (CNA) to Celso Cepeda (19 feb 1924); AHA, AS, caja 271, expediente 6547, Cepeda to SAF (8/1/30); AHA, AS, caja 271, expediente 6547, CNA to Celso Cepeda (2/25/24).
20. AHA, AN, caja 522, expediente 5735, Resolucion Presidencial, Plutarco Elias Calles (9/7/26).
21. AHA, AN, caja 522, expediente 5735, "Informe 438" (4/9/29).
22. AHA, AS, caja 1665, expediente 24274, Comision Particular Administrativa Congregacion San Bernabe Topo Chico to CNA (12/28/26); AHA, AS, caja 1665, expediente 24274, "Peticion" (3/25/27).
23. AHA, AS, caja 1665; expediente 24274, (5/21/27); AHA, AS; caja 1665; expediente 24274, (7 junio 1927); AHA, AS, caja 633, expediente 9139, "Informe 480" (11/30/27).
24. AHA, AN, caja 522, expediente 5735, SAF "Gestion #55" (12/5/27).
25. AHA, AN, caja 470, expediente 4963, SAF (12/31/27).
26. AHA, AS, caja 271, expediente 6547, (3/16/28).
27. AHA, AN, caja 522, expediente 5735, "Informe" Ing Leonel Lemus (7/24/30).
28. AHA, AS, caja 1195, expediente 16636, "Informe #575" (11/18/30).
29. AHA, AS, caja 1665, expediente 24274, Governor Jose Benitez to SAF (2/25/29).
30. AHA, AS, caja 1665, expediente 24272, SAF to Garza Gonzalez (2/3/29).
31. AHA, AS, caja 1196, expediente 16641, Contract Junta and Garza (5/3/28).
32. AHA, AS, caja 1195, expediente 16636, Solicitud Derechos Agua Caliente y Ojo Caliente (10/23/29).

33. AHA, AN, caja 522, expediente 5735, SAF Informe #75 (18/2/29).
34. AHA, AN, caja 522, expediente 5735, SAF Informe #368 (7/1629).
35. AHA, AS, caja 1655, expediente 24274, (12/28/26); AHA, AN, caja 522, expediente 5737, Vidaurri to Parres (6/20/29).
36. AHA, AS, caja 1665, expediente 24274, Garza to SAF (1/2/29).
37. AHA, AN, caja 522, expediente 5735, SAF Informe #368 (7/16/29).
38. AHA, AN, caja 522, expediente 5735, (9/7/29).
39. AHA, AS, caja 1195, expediente 16636, Solicitud (8/20/29).
40. AHA, AS, caja 1196, expediente 16641, Solicitud (9/21/29).
41. AHA, AS, caja 1195, expediente 16636, SAF to Congregation (9/23/29).
42. AHA, AN, caja 489, expediente 5201, SAF to Compania (5/31/30).
43. AHA, AN, caja 489, expediente 5201, Informe #485 (10/10/29).
44. AHA, AN, caja 469, expediente 4947, Alfonso de la Torre to SAF (5/21/31). http://www.topochico.com/lideraz.html. Retrieved 2/17/2012.
45. http://www.topochico.com/lideraz.html. Retrieved 2/17/2012.
46. AHA, AS, caja 1196, expediente 16641, Acta Notarial (10/26/29); AHA, AN, caja 522, expediente 5735 "Informe" Ing Leonel Lemus (7/24/30).
47. AHA, AS, caja 271, expediente 6547, Consejo Superior de Salubridad to Congregation (10/23/29).
48. AHA, AS, caja 271, expediente 6547, Cepeda to SAF (1/9/30); AHA, AS, caja 11096, expediente 16641, CNA to SAF (10/10/30).
49. AHA, AN, caja 522, expediente 5735, "Informe 278" (7/24/30); AHA, AS, caja 11096, expediente 16641, CNA to SAF (10/10/30).
50. AHA, AN, caja 522, expediente 5735, Cepeda to Cedillo (10/10/31).
51. http://www.topochico.com/lideraz.html

REFERENCES

Aboites, L. (1998). *El agua de la nación: una historia política de México, 1888–1946*. Mexico: CIESAS.

Aboites, L. (2002). Notas sobre el optimismo mexicano y los vínculos entre geografía, ingeniería hidráulica y política (1926–1976). In Patricia Avila Garcia (Ed.) *Agua cultura y sociedad en México* (pp. 185–198). Zamora: El Colegio de Michoacan / IMTA / SEMARNAT.

Aboites, L. (2012). The transnational dimensions of Mexican irrigation, 1900–1950. *Journal of Political Ecology, 19*, 70–80. Retrieved from http://jpe.library.arizona.edu/volume_19/Aboites.pdf

Agostoni, C. (2003). *Monuments of progress: Modernization and public health in Mexico City, 1876–1910*. Mexico: UNAM.

Almaraz, A., & Cerutti, M. (Eds.). (2013). *Algodón en el norte de México (1920–1970): impactos regionales de un cultivo estratégico.* Tijuana: COLEF/Juan-Pablos Editores.

Ballou, M. (1890). *Aztec land.* Boston and New York: Houghton, Mifflin and Company.

Bates, J. (1887). *Notes of a tour in Mexico and California.* New York: Burr Printing House.

Blake, M., & Sullivan, M. (1888). *Mexico: Picturesque, political, progressive.* Boston and New York: Lee and Shepard Publishers.
Boyer, C., (Ed.). (2012). *A land between waters: Environmental histories of modern Mexico.* Tucson: University of Arizona Press.
Bringas, R. (2010). *Historia de Tehuacán:de tiempos prehispánicos a la modernidad.* Mexico: Miguel Angel Porrúa.
Carmona, F., Montaño, G., Carrión, J., & Aguilar M., A. (1973). *El milagro mexicano.* Mexico: Editorial Nuestro Tiempo.
Coatsworth, J. (1981). *Growth against development: The economic impact of railroads in Porfirian Mexico.* Dekalb: Northern Illinois University Press.
Coley, N. (1979). "Cures without care": "Chymical physicians" and mineral waters in seventeenth-century english medicine. *Medical History, 23,* 191–214.
Cordova, A. (1989). *La revolución y el Estado en México.* Mexico: Ediciones Era.
Escobar, S. (1990). El cardenismo más allá del reparto: acciones y resultados. In E. Escárcega, L. Hernández & S. Escobar (Eds.), *El cardenismo: un parteaguas histórico en el proceso agrario (1934–1940)* (pp. 423–482). Mexico: Siglo XXI.
Ford, I. (1893). *Tropical America.* New York: Charles Scribner's Sons.
Gilly, A. (1971). *La revolución interrumpida.* México: El Caballito.
Hackson, J. (1890). *A winter holiday in summer lands.* Chicago: A.C. McClurg and Co.
Hamlin, C. (2000). "Waters" or "Water"?: Master narratives in water history and their implications for contemporary water policy. *Water Policy, 2,* 313–325.
Hart, J. M. (2002). *Empire and revolution: The Americans in Mexico since the civil war.* Berkeley: California.
Harvey, D. (2003). *The new imperialism.* Oxford: Oxford University Press.
Holden, R. (1994). *Mexico and the survey of public lands.* Dekalb: University of Northern Illinois Press.
Jennings, E. (2006). *Curing the colonizers: Hydrotherapy, climatology, and French colonial spas.* Durham: Duke University Press.
Jones, B. M. (1967). *Health-seekers in the southwest, 1817–1900.* Norman: University of Oklahoma Press.
Joseph, G., & Nugent, D. (Eds.). (1994). *Everyday forms of state formation: Revolution and the negotiation of rule in modern Mexico.* Durham: Duke University Press.
Knight, A. (1985). *The Mexican revolution* (Vols. 1–2). Lincoln: University of Nebraska Press.
Linton, J. (2010). *What is water? The history of a modern abstraction.* Vancouver: University of British Columbia.
Luxemburg, R. (1964). *The accumulation of capital.* New York: Monthly Review Press.
Margati, J. (1885). *A trip to the city of Mexico.* Boston: Putnam, Messervy and Co.
Marx, K. (1990). *Capital Volume 1.* London: Penguin Classics. (Original work published 1867)
Mora-Torres, J. (2001). *The making of the Mexican border.* Austin: University of Texas Press.
Palerm, A. (1998). *Antropología y marxismo.* Mexico: CIESAS.
Porter, R. (Ed.). (1990). *The medical history of waters and spas: Medical History Supplement 10.* London: Wellcome Institute for the History of Medicine.

Riley, J. J. (1972). *A history of the American soft drink industry: Bottled carbonated beverages, 1807–1957.* New York: Arno Press.
Romero Lankao, P. (2010). Water in Mexico-City: What will climate change bring to its history of water-related hazards and vulnerabilities? *Environment and Urbanization 22*(1), 157–178.
Samaniego, M. (2006). *Rios internacionales entre Mexico y Estados Unidos: los tratados de 1906 y 1944.* Mexico: El Colegio de Mexico.
Smith, F. (1889). *A white umbrella in Mexico.* Boston and New York: Houghton Mifflin.
Tilly, C. (1985). War making and state making as organized crime. In P. Evans, D. Rueschemeyer & T. Skocpol (Eds.), *Bringing the state back in* (pp. 169–185). Cambridge: Cambridge University Press.
Tortolero, A. (2000). *El agua y su historia. México y sus desafios hacia el siglo xxi.* Mexico: Editorial Siglo XXI.
Valenza, J. M. (2000). *Taking the waters in Texas: Springs, spas, and fountains of youth.* Austin: University of Texas Press.
Vaughn, M. K. (1997). *Cultural politics in revolution: Teachers, peasants, and schools in Mexico, 1930–1940.* Tucson: University of Arizona Press.
Vitz, M. (2012). "The lands with which we shall struggle": Land reclamation, revolution, and development in Mexico's Lake Texcoco basin, 1910–1950. *Hispanic American Historical Review 91*(1), 41–71.
Walsh, C. (2008). *Building the borderlands: A transnational history of irrigated cotton along the Mexico-U.S. border.* College Station: Texas A&M University Press.
Walsh, C. (2012). Mexican water studies in the Mexico-U.S. borderlands. *Journal of Political Ecology, 19,* 50–56. Retrieved from http://jpe.library.arizona.edu/volume_19/walshintro.pdf
Walton, J. K. (2012). Health, sociability, politics and culture. Spas in history, spas and history: An overview. *Journal of Tourism History 4*(4), 1–14.
Wittfogel, K. (1957). *Oriental despotism: A comparative study of total power.* New Haven: Yale University Press.
Wolfe, M. (2013). The historical dynamics of Mexico's groundwater crisis in La Laguna: Knowledge, power and profit, 1920s to 1960s. *Mexican Studies/Estudios Mexicanos 29*(1), 3–35.
Worster, D. (1985). *Rivers of empire: Water aridity and the growth of the American west.* New York: Pantheon Books.

• • • • • • • • • •

Fuentes minerales, acumulación primitiva y el "agua nueva" en México

Casey Walsh

Resumen: El artículo explora el proceso de centralización de los recursos hídricos por parte del Estado Mexicano entre 1880–1940, y particularmente analiza la manera en que después de 1920 el estado posrevolucionario facilitó la transferencia del control de las comunidades agrarias locales de los manantiales de Topo Chico, a las empresas embotellado-

ras industriales. Utilizando fuentes de archivo, el autor evidencia la importancia de la ciencia y el derecho en este proceso, y muestra que la centralización debe entenderse con base en la "acumulación primitiva". Este artículo se centra en el estudio de las fuentes minerales termales, las cuales a pesar de ser una ventana privilegiada para la centralización y la acumulación primitiva, han sido ampliamente ignoradas por la historiografía hídrica.

Palabras claves: acumulación por desposesión, agua, baño, embotelladoras, formación del estado, fuente minerales termales, México

Les sources minérales, l'accumulation primitive, et la «nouvelle eau» au Mexique

Casey Walsh

Résumé: Cet article explore le processus de centralisation des ressources hydriques par l'Etat-nation mexicain entre 1880 et 1940, et en particulier la façon dont l'Etat postrévolutionnaire a facilité, à partir de 1920, le transfert du contrôle des sources hydriques de Topo Chico des communautés agraires locales aux entreprises d'embouteillage industriels. Fondé sur les sources documentaires archivistiques, il souligne l'importance de la science et du droit dans ce processus, et fait valoir que la centralisation doit être comprise en termes «d'accumulation primitive». L'article se concentre sur les sources d'eaux minérales chaudes, qui fournissent une fenêtre privilégiée sur la centralisation et l'accumulation primitive, mais sont largement ignorées dans l'historiographie de l'eau.

Mots-clés: accumulation par dépossession, baignade, eau, embouteillage, formation de l'état, Mexique, sources d'eaux minérales chaudes