

Mikael D. Wolfe. *Watering the Revolution: An Environmental and Technological History of Agrarian Reform in Mexico.* Durham: Duke University Press, 2017. Illustrations. 336 pp. \$94.95, cloth, ISBN 978-0-8223-6359-0.

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At first glance, the animating question of Mikael D. Wolfe's *Watering the Revolution: An Environmental and Technological History of Agrarian Reform in Mexico*—"how and why do governments persistently deploy invasive technologies for development even when those technologies are ecologically unsustainable?"—may seem to have simple answers (p. 2). Planners and developers had different political or socioeconomic priorities, or trusted future technological advances to rectify their shortcomings. Wolfe takes such facile assumptions not as obvious answers but as the starting point for meticulously unpacking the history of social conflict and revolutionary water management in northern Mexico's La Laguna cotton heartland during the late nineteenth and twentieth centuries. He focuses particular attention on the period of dam construction during the peak of revolutionary reform through the 1930s, and on the era of the Green Revolution in the mid-twentieth century. Wolfe explains the shift from relatively benign local practices of irrigation, known as *aniego*, whereby flood waters were captured and impounded to enrich the soil and replenish the subterranean aquifer, to a revolutionary regime of water management focused on the "conservation" and use of surface waters with the construction of dams and reservoirs that trapped

the waters and disrupted the ecological cycles that promoted downstream agricultural productivity and depleted the subterranean aquifer over time. As Wolfe ultimately argues, "while a dam reservoir would conserve water, it could also impede aquifer recharge by reducing the free flow on which *aniego* depended" (p. 20).

Theoretically, Wolfe asserts that the history of environmental change and policy cannot be divorced from the technological developments the Mexican *tecnícos* deployed to reshape the Nazas and other rivers of La Laguna. He references case studies from Egypt and Europe to articulate a framework of "envirotech" history that brings together insights from environmental historians studying the changing relationship between human societies and the natural world, and historians of technology and its interaction with society, culture, and politics. His approach recalls the work of a previous generation of anthropologists, such as Julian Steward and Marvin Harris, who developed the concept of a "techno-environment" for understanding cultural change. Similarly, the work of environmental historians focusing on shifting modes of production, or agroecology, might be instructive for the study of technological intrusions and ecological change. Nonetheless, Wolfe is surely correct to argue that his study is

the “first such envirotech history of agrarian reform in Mexico” (p. 6).

Wolfe’s conclusions are based on extensive research in archives in the United States and Mexico. Beyond the National Archives of both nations, he draws on the rich and unique collection at the Archivo Historico del Agua in Mexico City, regional archives in Torreón, and the extensive holdings of the Rockefeller Archive Center. At the center of Wolfe’s narrative stand the *tecnícos*, the various hydrologists, agronomists, and engineers who mediated the encounters among the state, society, and the natural world. In addition to examining the records of state administrators, such as Secretary of Hydraulic Resources Marte R. Gomez, Wolfe consults the documentary records of engineers, hydrologists, and Rockefeller Foundation extension officers and scientists operating on the ground in La Laguna. His extensive research provides a comprehensive case study of the region and could offer a methodological model for comparative studies of the agrarian reform in other regions, by exploring the interactions among regional, national, and transnational actors.

Wolfe builds on the work of Mexican environmental historians, including Christopher Boyer and Emily Wakild, who have illustrated the significance of forest and land use management for constructing the postrevolutionary regime. Most directly, Wolfe engages with the seminal arguments of Luis Aboites Aguilar’s *El agua de la nación: Una historia política de Mexico, 1888-1946* (1998). However, while Aboites argues that management of water was essential to the federalizing and centralizing process of Porfirian and postrevolutionary state formation, Wolfe sees water management as the key to understanding the commitment, perhaps misguided in practice, to a revolutionary program of social justice. For Wolfe, then, the key phrase for understanding the history of water management and social relations is not *el agua de la nación* (water of the nation) but the more specific “*el agua de la revolución*” (water of

the revolution) (pp. 16-17). Distribution of reliable waters proved central to the revolutionary agrarian reforms under Lázaro Cárdenas during the peak years of the 1930s. Indeed, part 1 of Wolfe’s narrative focuses on political and social contestation over access to *aniego* irrigation from the Nazas River among large landowners, particularly the upriver Tlahualilo Estate, and downstream water users and *ejidatarios* (beneficiaries of communal land reforms), and culminates with the construction of the Palmito Dam as “the ultimate envirotechnical solution” to water conflicts (p. 127).

Technological changes, however, followed the political shift within the Institutional Revolutionary Party (PRI) after 1940. Groundwater pumping, to the financial benefit of pump manufacturers and PRI officials, had supplemented the distribution of irrigation waters during the construction of the Palmito Dam and, over time, threatened to drain the subterranean aquifer. Transnational “development” experts promoted the intensification of agriculture using chemical pesticides and Green Revolution technologies requiring extensive irrigation, and a renewed commitment to social justice doubled down on ecologically unsustainable hydrological engineering schemes. Wolfe concludes his study with a cautious optimism about the way forward for a hydraulic regime that balances the need for “development” with a commitment to revolutionary social justice, and an emerging environmental awareness. His skepticism seems well founded, but perhaps this history of the Mexican Revolution may yet have something to teach us and help us prevent (or at least mitigate the damage from) environmentally and socially unsustainable schemes as we strive for a greater sense of environmental justice.

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