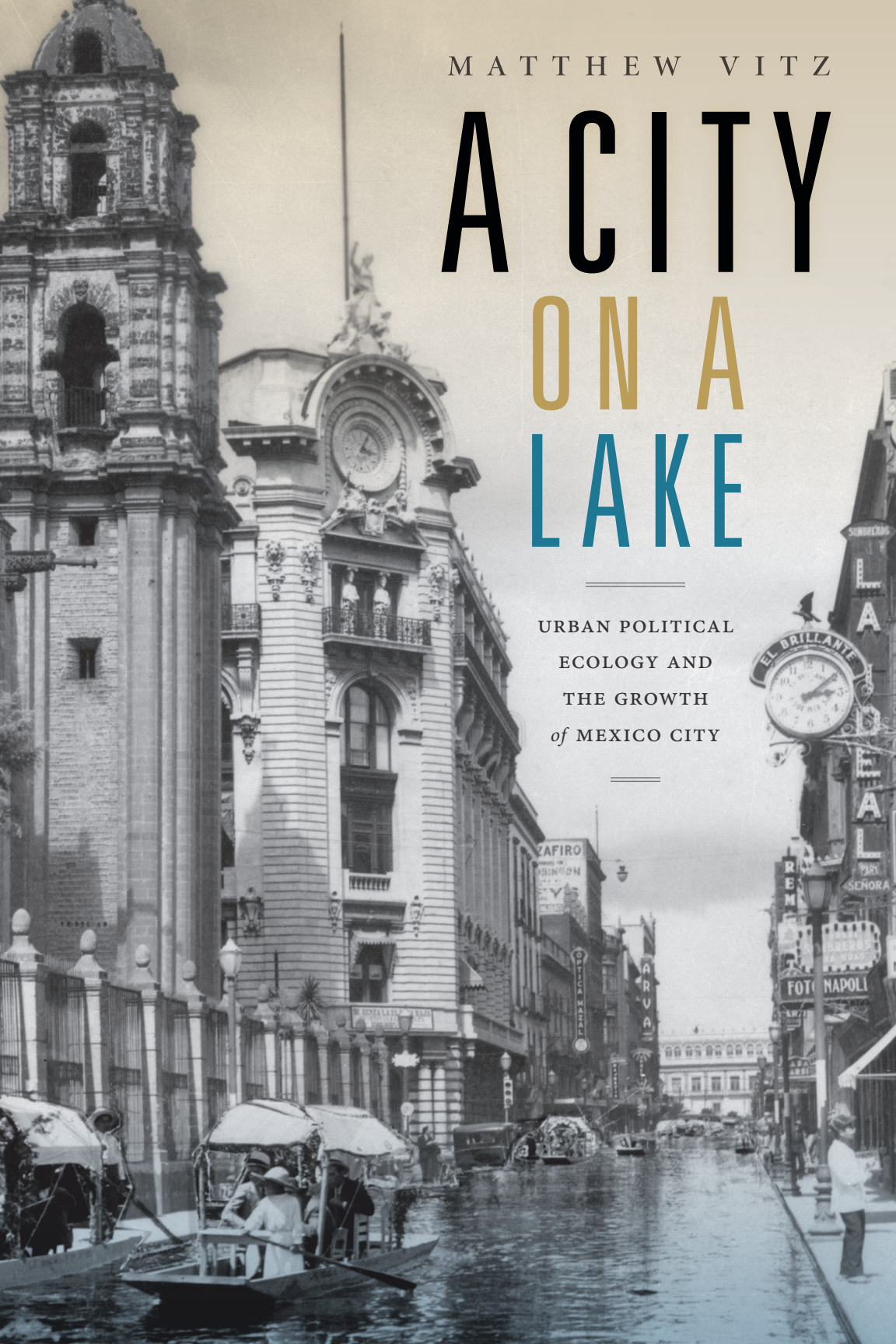


MATTHEW VITZ

A CITY ON A LAKE

URBAN POLITICAL
ECOLOGY AND
THE GROWTH
of MEXICO CITY



A CITY ON A LAKE

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A CITY ON A LAKE

*Urban Political Ecology and the
Growth of Mexico City*

MATTHEW VITZ

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Cover art: Montage of flooded Madero Street that simu-
lates the presence of *trajineras*, canoe-like boats from
Xochimilco, 1945 (Casasola). Courtesy of INAH, Fototeca
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ABBREVIATIONS

AGA	Archivo General Agrario
AGN	Archivo General de la Nación
AHA	Archivo Histórico del Agua
AHDF	Archivo Histórico del Distrito Federal
ALR	Abelardo L. Rodríguez
AN	Aguas Nacionales
AS	Aguas Superficiales
CGT	General Workers Confederation
CROM	Regional Confederation of Mexican Workers
DDF	Departamento del Distrito Federal
LCR	Lázaro Cárdenas del Río
MAC	Manuel Ávila Camacho
O/C	Obregón/Calles
OP	Obras Públicas
PCM	Mexican Communist Party
PRI	Institutional Revolutionary Party
PRM	Party of the Mexican Revolution
SAF	Ministry of Agriculture and Fomento
SARH	Ministry of Agriculture and Hydraulic Resources
SCOP	Ministry of Public Works and Communications
UIEF	Industrial Units for Forest Development

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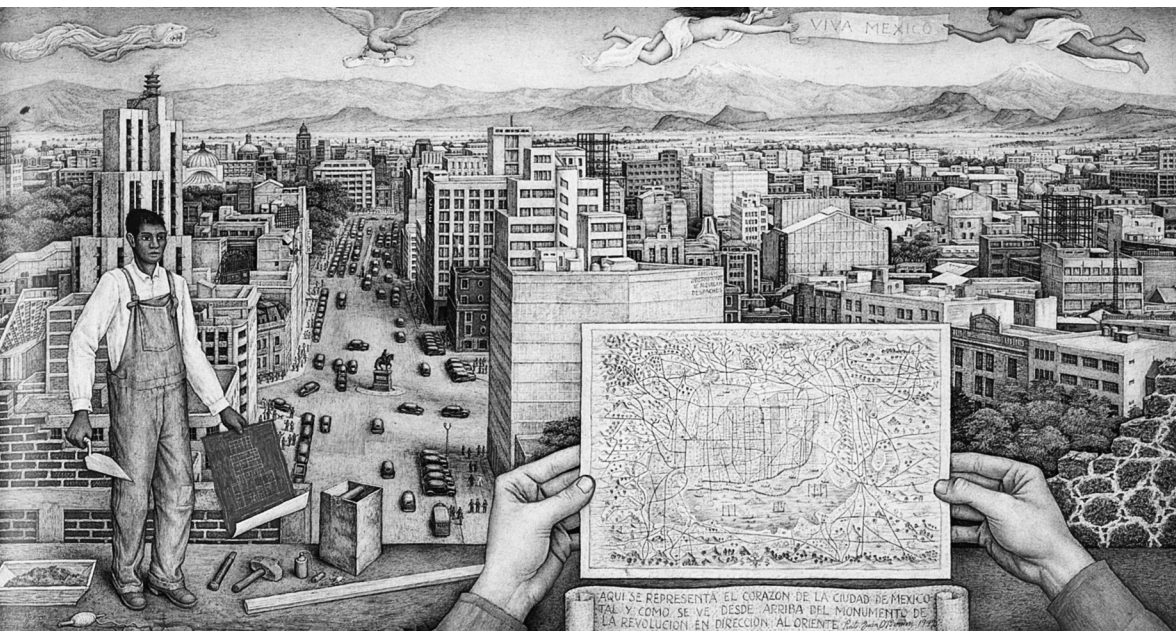


FIGURE I.1 — Juan O'Gorman, *Paisaje de la Ciudad de México*, 1949.

INTRODUCTION

In 1949 the daily *Excelsior* organized the artistic competition “Mexico City as Interpreted by Its Painters,” with the backing of the city government and the Banco de México. The exhibition, held in December 1949, displayed 257 paintings submitted by national and international artists, attracting some thirty thousand visitors over its nine-day tenure. The modernist architect-turned-painter Juan O’Gorman won first prize for his now-famous *Paisaje de la Ciudad de México* (*Landscape of Mexico City*). (See figure I.1.) Most critics have interpreted O’Gorman’s painting as an acclamation of Mexico City’s mid-twentieth-century development under the Institutional Revolutionary Party (PRI). The painting features a vibrant city with clean skies, green space, and modernist architecture. However, O’Gorman, a prominent socialist critical of the capitalist modernization Mexico was undergoing after 1940, also subtly depicted the erosion of national culture and the abandonment of the working class that PRI rule had wrought. The early colonial map in the foreground shows the formerly aquatic Basin of Mexico where the capital city was situated—a reminder to Mexican viewers of their lost indigenous

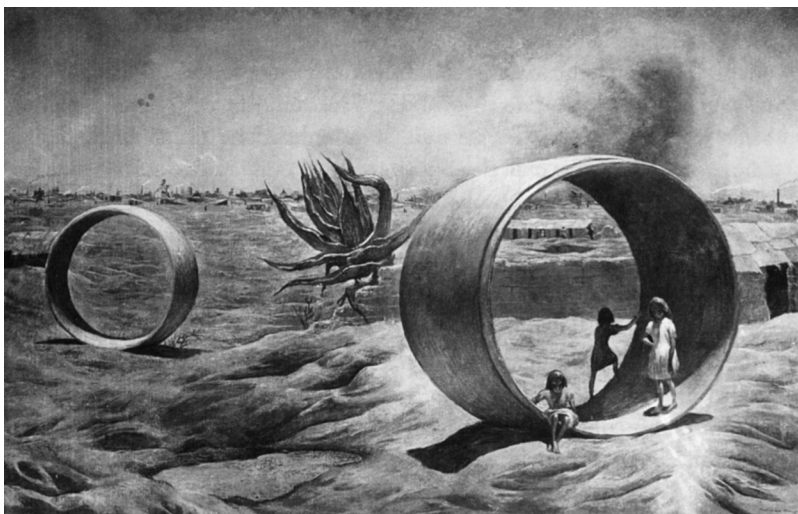


FIGURE 1.2 — Guillermo Meza, *La Tolvanera*, 1949.

civilization—juxtaposed with the mostly barren lands beyond the cityscape where Lake Texcoco once stood. The indigenous-featured mason, representative of Mexican workmanship, is seen being pushed aside by the reinforced concrete, steel, and glass of buildings designed using foreign architectural styles.¹

The winner of the second prize, Guillermo Meza, displayed not O’Gorman’s metaphorical ambivalence about the city’s growth but rather dread of environmental catastrophe. Meza’s *La Tolvanera* (*The Dust Storm*) takes us to those barren lands of the old Texcoco lakebed, where briny soil swirled and tormented Mexico City’s inhabitants, primarily the working-class settlers driven to live on hazardous lands. Children mingle inside one of two drainage-pipe fragments, an allusion to the hydraulic infrastructure that helped desiccate the basin’s vast lake system (see figure 1.2). Meza was not alone in his apocalyptic midcentury vision of Mexico City. He drew on other artistic work such as Carlos Tejeda’s dystopian painting *La Ciudad de México por allí de 1970* (*Mexico City around 1970*), from 1947, which depicted a dried, deforested, earthquake-ravaged city, and lithographer Alfredo Zalce’s portrayals of urban corruption and chaos.²

The apocalyptic imaginary intensified in the following decades. Urban chronicler Arturo Sotomayor imagined space aliens visiting the ruins of the basin to

determine what had caused the decline of a once-magnificent civilization. The lesson: Mexicans had not learned to live within the limits of nature, having converted a forested, water-rich environment into a smog-infested desert of concrete sprawl that subsumed the Federal District and spilled into the adjacent State of Mexico.³ A few years later, in “Return to the Labyrinth of Solitude,” Octavio Paz fulminated against government technocrats for turning Mexico City “into a monstrous inflated head crushing the frail body that holds it up.”⁴ The witty essayist Jorge Ibargüengoitia continued the corporal analogy, likening Mexico City to a fast-growing boy who made his parents proud. When the boy reached a height of ten feet at the age of eighteen months, people said nothing. But then the boy ate the maid, “and someone mustered up the courage to ask his mother: ‘Look here, has he seen a doctor?’”⁵ Seeing the city devastated by the earthquake of 1985, daily smog attacks, and a bleak economy, distinguished cultural critic Carlos Monsiváis reflected whether Mexico City might be “post-apocalyptic”: “Here is the first megalopolis to fall victim to its own excess. . . . The main topic of conversation at gatherings is whether we are actually living the disaster to come or among its ruins.”⁶

All of this lies in stark contrast to the many florid descriptions of the city and its surroundings during much of the nineteenth century. Mexico City, located seventy-two hundred feet above sea level in a giant basin improperly named the Valley of Mexico, is surrounded by mammoth volcanic peaks and towering mountains to the south and west, lower ridges to the east, and a high mesa to the north. It was a place that lent itself to admiration.⁷ Visitors to the basin lauded “the beautiful city . . . surrounded by various shaded promenades and brilliant country fields.”⁸ They relished the “thick forests” of the Ajusco mountain range to the south, the Sierra de las Cruces to the west, and the sinuous slopes of the Iztaccíhuatl and Popocatepetl volcanoes, commonly known as the Sierra Nevada, as well as the immense basin below, “praised in all parts of the world . . . with its large lakes and fertile plains encircling Moctezuma’s favorite city.”⁹ Australian diplomat Charles La Trobe named Mexico City “the city of palaces,” and Prussian geographer Alexander von Humboldt at the tail end of his journey through Spanish America remarked on the clarity of the valley’s air. Perhaps the most lavish admiration came from the American writer Brantz Mayer, for whom the valley was an incomparable sight, a place that surpassed all the natural wonders of Europe combined. Mayer observed, “No other panorama of valleys and mountains offers a similar set of elements [as this one], because in no other part are the mountains so high and at the same time the

valley so spacious and so full of a variety of lands and waters.”¹⁰ Mayer, like the travelers preceding him, viewed peaks of fourteen thousand feet or more, rising well above the tree line. Below the tree line grew pine, conifer, and oak forests, where heavy summer rains fed seasonal rivers that flowed through the piedmont—a medley of fertile fields in the south and sterile land made of the hardened rocky soil known as *tepetate* in the north—down into the lakes below: Chalco and Xochimilco to the south, Texcoco to the east, and several more to the north.

Mexicans proffered their own decorative descriptions. The Basin of Mexico inspired the liberal poet and military officer Ramón I. Alcázar, whose poem “A la vista del valle de México” (“In Sight of the Valley of Mexico,” 1860) exalted its “green hills” and “crystalline lake water.”¹¹ The renowned late nineteenth-century landscape painter José María Velasco contrasted with his brush the modernity of Mexico City with the pastoral, lacustrine beauty of the hinterland. Echoing Humboldt’s words and María Velasco’s imagery, the geographer Antonio García Cubas referred to the “picturesque Valley of Mexico” and boasted of its abundant natural elements (see map I.1).¹²

Yet as Humboldt, María Velasco, and Fanny Calderón de la Barca, the flowery travel writer and wife of the first Spanish ambassador to Mexico, made clear, the Basin of Mexico was hardly in a state of environmental equilibrium during the nineteenth century.¹³ Owing to the needs of the capital city nestled near its center, the basin had undergone gradual environmental changes since the apex of Mexica civilization. Land clearing for Old World ungulates diminished forest cover, as did demand for firewood, charcoal, and construction material; unsustainable land use accelerated soil erosion and aggravated sediment buildup in lakebeds. And the Spanish colonial elite, whose property holdings were jeopardized by floodwaters settling in the lowest parts of the basin, built massive drainage infrastructure that reduced the lake system by nearly 80 percent, from a thousand square kilometers in 1519 to two hundred square kilometers by 1850.¹⁴ These early changes, however dramatic they may have been, were dwarfed by the rapid environmental and social transformations of the late nineteenth and early twentieth centuries, a period in which Mexico City became the national hub of capitalist urbanization and state-directed environmental planning. The turning point was the 1870s, which city chronicler Jesús Galindo y Villa denoted as the beginning of the Mexico City “of our times.”¹⁵

Writing in the 1920s, Galindo y Villa claimed that it was the “luck” of his generation “to witness Mexico City’s surge toward modern life, to feel its



MAP I.1 — Mexico City and its surroundings. COURTESY OF BILL NELSON.

extraordinary evolution, its prodigious expansion, the transformation of its municipal services, in short its progress.”¹⁶ This zeal for progress was shared by a host of urban boosters, planners, and developers and hinged on a series of key environmental projects and policies. It is this city’s environmental, political, and social transformation from a small and rather stagnant national capital at the beginning of the nineteenth century to a major metropolis by the mid-twentieth century that is the subject of this book.

The post–World War II artists and intellectuals of an ecocritical bent captured an essential truth: Mexico City is, indeed, a city facing extraordinary social and environmental predicaments. This book helps explain the origins and evolution of these problems by tracking the rapid environmental transformation of the basin and identifying the assorted variables driving those transformations. But this is just scratching the surface of a deeper history.

From Sotomayor and Ibargüengoitia to environmentalists and the public at large, there is a tendency to depict the recent history of the Americas’ largest city as one of inevitable and inexorable decline. It is a unidirectional history that conceives of the environment and people as mere victims of sociostructural forces. As the city grew, the story goes, communities were disempowered and nature bulldozed, never to rise again (even if nature has of late reasserted itself in such undesirable forms as flooding). Such a narrative offers uncanny parallels with Mexico’s political narrative. The monolithic, monstrous city was the offspring of an equally monolithic and monstrous political party, the PRI, which ruled Mexico from 1929 to 2000, propelling the capital down a path of unrestrained growth. In this telling, Mexico City encapsulated the ruling party’s bungled governance, emerging as a microcosm of national ruination and disempowerment. However accurate a depiction of late twentieth-century Mexico City this may be, the narrative—if one accepts its coherence as such—occludes an earlier, more open-ended urban history. This book employs the tools of social and environmental history to challenge assumptions about the city’s growth and its relation to the surrounding Basin of Mexico from the late nineteenth to the mid-twentieth century.

Environmental decline is an unequivocal reality in the basin. Mexico City is not the place to upend declensionism within environmental historiography. But the destruction of nature is not the only, or the most important, story to tell; indeed, this story omits a great deal. In this book I underscore the ways in which nonhuman nature, rather than being torn asunder, was inextricably joined to the built environment in the process of urbanization. I uncover largely forgotten histories of popular groups, government officials, and

planners disputing urban growth and, at certain moments, promoting more just and environmentally sound visions of the city and its hinterland. Mexico City's enormous twentieth-century growth was embedded in and forged out of an overlapping set of contingent, if structurally conditioned, social conflicts and scientific disputes over its dynamic metropolitan environment—the lands, waters, forests, networked infrastructure, and new subdivisions, all of which were tightly bound to urbanization.¹⁷

Mexico City, like other booming Latin American metropolises of the twentieth century, was the product of much struggle and negotiation over its metropolitan environment. To borrow from Marxist philosopher-geographer Henri Lefebvre, the capitalist city undergoes an urban revolution that consumes space through market expansion and the creation of industrial zones, infrastructural networks, population flows, and settlements—the warp and woof of what he deemed an urban fabric extending well beyond the confines of the city itself.¹⁸ Lefebvre, however, for all his understanding of urbanization as a spatial process, retreated to the conventional opposition of city and nature. In this he was not alone. His contemporary from across the Atlantic, the urban theorist Lewis Mumford, declared, “As the pavement spreads, nature is pushed away,” conflating an idyllic countryside with nature itself and setting up a false dichotomy between the urban as the realm of pure artifice and the rural as spaces of nature.¹⁹ Yet the dynamic interaction between people and their changing environments holds a key to unlocking the social and political character of modern metropolitan development.

The world's largest cities, like Mexico City, provide insight into the historical, spatial, and environmental process of urbanization. Water, energy, construction material, and other resources must be obtained, controlled, and circulated, an effort that necessitates much state power, technical expertise, and capital investment. These efforts transform environments, shape political structures, and engender myriad social struggles over the spaces impacted by urbanization. I contend that the development of Latin American (indeed all) metropolises needs to be understood within wider sociospatial scales, which are ever more global in scope. Cities are not discrete entities but rather are dynamically interconnected to larger metropolitan environments created through infrastructural works; through the harnessing of resources and the disposal of wastes; through commodity flows, population growth, and capitalist strategies; through ecological changes across disparate spaces; and through state-making practices and popular politics. The metropolitan environment, in turn, has molded what is politically possible for a range of actors—popular

groups, planners, industrialists, developers, and state officials—operating on an uneven field of play who have had competing claims to a resource, space, or city service.

A City on a Lake explains the why, how, and for whom of urban growth and draws on the scholarship of urban political ecology to zoom in on the interplay among power, planners, environmental change, and popular politics in Mexico City. It places nonhuman nature—reworked, regulated, and contested—squarely within the urban fabric. By following water, waste, dust, and forest products and other commodities, as well as urban experts and developers, in and out of cities, we can gain a more sophisticated understanding of how urban power has been exercised, reproduced, and challenged. Such a framework is vital to the urban historiographical endeavor as well as to the politics of urban justice and sustainability.

Mexico City is a palimpsest of infrastructures, urban design, physical transformation, and settlement patterns. Scraping away several layers of this palimpsest takes us back to the mid-nineteenth century when Mexico City, with a population of 150,000, was portrayed as a quaint, bucolic “city of palaces.” Even then the Basin of Mexico was a highly engineered environment; the capital depended on the salubrious flow of water. Mexican sanitarians, however, many of whom served key planning roles by 1900, depicted not a city of splendor but a city of stagnant water, of disease and disorder, of failed and outdated engineering. Like those found in other cities, Mexico City’s waste disposal system was a hodgepodge of septic pits, open gutters, and, in some central sections, underground pipes. Downtown streets featured open canals, which were designed to flush wastewater to the Texcoco lakebed, the lowest-lying and closest lake. Design rarely met function. The renowned geographer Manuel Orozco y Berra noted the “noxious miasmas” that rose from “fecal matter and animal and plant remains” in open sewers lacking declivity.²⁰ The budding engineer Roberto Gayol found that many of the canals had sunk so far that they drained away from the lake and that some overflowed upon heavy rainfall.²¹ Most residents deposited their wastes into the open gutters or directly onto the street. The Mexican slang phrase “¡Aguas!” (Watch out!) derives from the historical practice of tossing waste from upper-story windows. Outdoor defecation was commonplace since lower-class homes and tenements lacked toilets, and public restrooms were scarce and poorly kept.

If pollution from within the city had been the only trouble facing public health officials, Mexico City would have resembled most metropolises. But

most other cities enjoyed more auspicious geographic locations than at the bottom of an endorheic basin. The much-reduced Lake Texcoco, which received the city's wastewater via the San Lázaro Canal, constituted a public health menace like no other. A shell of its former grandeur, Texcoco exhaled a foul odor approximating "rotten shellfish," spewing what were believed to be illness-laced miasmas across Mexico City. Colonial-era drainage infrastructure had taken its toll, but so had soil sedimentation, and the extension of the lake varied drastically depending on the rainfall.²² On his visit to the lakebed in March 1883, the late-century savant Antonio Peñafiel described not waters one or two meters deep, a common sight two centuries before, but rather "a moribund lake" of "putrefied organic waste" with "cadavers in decomposition." He wryly remarked that the city was "threatened with asphyxiation."²³

Residents feared more than deadly vapors. During the dry season, the prevailing northerly winds lifted up briny dust from the dried Texcoco bed and the denuded hillsides, which mixed with the city's animal and human waste to form a pernicious cocktail. Invading floodwaters replaced swirling dust during the rainy season, and Texcoco overflowed onto city streets in 1856, 1865, and 1886. The flood in 1886 provoked one major city paper to ask facetiously, "Is this city a seaport?"²⁴

Urban experts also derided the potable-water system. Open-air aqueducts carried waters from Desierto de los Leones and Santa Fe in the southwestern mountains, and the closer Chapultepec Forest, to the capital. After traversing villages, ranches, farms, and mills, the water arrived laden with soil, detritus, and other contaminants.²⁵ Engineer José Lorenzo Cossio recalled bathing on Vergara Street: "upon drying off with a towel, it turned completely muddy."²⁶ Lorenzo Cossio was fortunate to have a connection to the municipal supply; in the mid-1880s, only 1,600 of 7,150 residences (about 20 percent) boasted one—mainly homes of the wealthy and convents—making a water hookup a marker of social status.²⁷ Chronic leaking debilitated an already feeble supply, leading many wealthier residents, businesses, and convents to dig private artesian wells, while the vast majority of the population obtained water from the approximately eighty public fountains and, illicitly, the many fire hydrants that dotted the city.²⁸ The urban ideal of a clean and ordered water system broke down in the face of spatial inequalities and planning deficiencies.

Although urban experts' denunciations of existing infrastructure brought the atrocious health conditions of Mexico City into relief, their narrow purview missed important, often symbiotic ties between city and hinterland inhabitants. Lake Texcoco was a health threat, but it was also the ecological basis,

in combination with Lakes Chalco and Xochimilco, of a vigorous economy connected to the city. As the urban market ballooned, the productive indigenous agricultural practice of *chinampería* expanded in pueblos such as San Gregorio Atlapulco, Santa María Nativitas, Tláhuac, and San Andres Mixquic around Lakes Chalco and Xochimilco. Campesinos erected soil beds (*chinampas*) in lakes, marshes, and canals, using the nutrient-rich plant life to grow corn, vegetables, and flowers. The *chinamperos* would transfer seedlings from nurseries to the chinampa plots, which were demarcated first by wooden poles and later by the ubiquitous willow and cypress trees. Irrigation was by osmosis or by the careful application of canal water into the raised bed.²⁹ By the end of the century as much as 75 percent of the area surrounding the city was under cultivation, and chinampa plots prevailed on lands around the southern lakes.³⁰

Chinampería is what Mexicans likely recall the most about the old economy of the basin, but there were other important uses of hinterland ecosystems. Many villagers around Lake Texcoco consumed or traded in city markets the sodium carbonate and sodium chloride (*el tequesquite*) that crystallized during dry-season evaporation, and all three major lakes sustained abundant wildlife that villagers exploited. The *armada*, the lakeshore duck-hunting technique dating back to the early colonial period, was widely practiced by villagers. Using horses to corral ducks to the “site of ambush,” hunters shot two rounds, one to frighten the birds into flight and a second to kill them. A well-organized armada could net thousands of ducks.³¹ Water also served as a means of transport. At midcentury, around two hundred long canoes traversed the basin’s lakes and canals daily, supplying various foods, charcoal, firewood, and other goods from the surrounding hinterland to the bustling urban markets such as Jamaica.³²

Some pueblos also enjoyed access to municipal infrastructure. The western town of Santa Fe in exchange for use of its property to construct the aqueduct, had reached an agreement to open a connecting pipe to quench townspeople’s thirst. In Cuajimalpa, to the southwest of the city, the city’s water guard reported that villagers were stealing water to irrigate their fields, “under the pretext that it is their right.”³³

Nineteenth-century urban environmental planners—engineers, architects, and other urban experts—ignored or outright eschewed these kinds of uses of hinterland nature. Their objective was to promote capitalist urbanization by sanitizing the Valley of Mexico, regardless of the effects on outlying inhabitants. Sophisticated engineering and state regulations, they hoped, would

refashion an untamed, ungoverned environment and conform its inhabitants within a decidedly urban and elite framework of resource use.³⁴

A growing number of planners seized the opportunity to realize this objective when decades of civil strife slackened and foreign invasion ended in 1867. More stable governance, institution building, and economic growth commenced under Benito Juárez, but it was during the reign of the politically astute and heavy-handed Porfirio Díaz, president between 1876–1880 and 1884–1911 (the Porfiriato), that urban environmental planning took off. The Porfirian elite, steeped in Hispanic notions of *civitas* that placed cities at the epicenter of civilization, focused on Mexico City's modernization, often to the neglect of other urban areas. The late nineteenth century marked a period of urban recovery in which Mexico City could once again "speak for the nation"; most Mexican rulers wanted little to do with Jeffersonian-infused U.S. American beliefs in the pastoral ideal.³⁵ The rejuvenation of the Mexican polity and the nation's newfound economic vigor hastened changes to the physical landscape.

Starting at the end of the nineteenth century, Mexico City's ecology was revolutionized in two intersecting ways. The first revolution was a sanitary one. Urban experts embraced the goal of the sanitary city to efface the noxious and vitiating components of modern life, meet the requirements of capitalist growth, and project the city's urban modernity beyond national borders.³⁶ Selectively borrowing and adapting planning ideas shared by urban elites the world over, Mexico City's environmental planners carried out drainage, sewerage, and water-supply projects and implemented urban sanitary codes and forest-conservation policies. Together, these forged a new metropolitan environment and tended to reproduce—even enhance—inequalities around the uses and appropriations of this environment. Directed by the centralizing state, however, planning initiatives began to shift the pendulum of power in and around Mexico City from the private realm of haciendas and developers to the public realm of state bureaucracy and its regulatory codes.

The second transformation began in 1910, this time as a set of political and social changes regarding how the material environment would be regulated, rearranged, and used. The Mexican Revolution, a series of heterogeneous conflicts over political power, social relations, and regional cultural values that unfolded between 1910 and 1920, widened opportunities for popular groups to challenge Porfirian-era urbanization. Postrevolutionary rulers aimed simultaneously to continue elite urban dominance and to more equitably distribute access to and uses of the metropolitan environment. Two competing political

frameworks enwrapped key spaces in the basin: one reformist and fastened to the political culture of the revolution of 1910, and the other elite and urban, with origins in the Porfirian development model guided by a centralized technocratic state. The tensions between the two frameworks molded environmental disputes between 1912 and 1940—from the forests of the Ajusco and the Texcoco lakebed, both located in the surrounding hinterland, to the newly sprouted subdivisions of the expanding capital. Cultural and political structures of power, in conjunction with the morphed ecologies wrought by planners and developers, defined the parameters of social struggle. But the struggles themselves, with their diverse actors, helped forge the urban landscape and direct urbanization through the 1930s and beyond. More equitable visions of the city succumbed to the engine of a pro-business industrial policy during the 1940s, but not without leaving cultural and physical imprints that have shaped (and continue to shape) the contemporary city.

The modern urban history of Latin America is a vast, rich, and fast-growing field dominated by two distinct lines of study. In the first, an array of historians have shed new light on urban social and political change, the politics of culture, and the popular experience of urbanity.³⁷ In the second, a smaller group of urban historians have explored the power and institutionalization of the state; their work has focused in particular on the role of a leading technical elite in transforming the built and natural environment during periods of urban expansion, when rule was reinforced by massive hydraulic projects that served as “monuments of progress” or “paradigms” of power politics and capitalist development.³⁸

My work builds on the recent recognition that these two research lines need to be fused.³⁹ This broader perspective on the environmental history of Mexico City weaves together the immaterial and the material, the “built” and the “natural” environment, and resource flows and political change. It situates matter within the power relations that have molded Mexico City’s growth without unduly emphasizing burgeoning bureaucracies or fetishizing elite policy-making spheres.⁴⁰ Mexico City’s growth must be understood through an analysis of environmental change as well as everyday politics. The heterogeneous popular classes within the basin made claims on the metropolitan environment that a slew of environmental planners regulated and reworked under the rubric of health and hygiene and with an intricate knowledge of emerging ecological problems.

Urban political ecology lies at the crux of this narrative. This emerging field, which sprang from Marxist geography and the multidisciplinary scholarship

on urban metabolisms, operates from the premise that nonhuman nature—plants, animals, soil, water, and biophysical processes—are inseparable from cities: their growth, their infrastructures, their food supplies, and their service networks.⁴¹ The nature in cities is not merely found in public parks, the “rehabilitated spaces of cities,” or rivers and harbors and their urbanized banks.⁴² Rather, flora, fauna, water, industrial materials and contaminants, soil mechanics, and diseases meld with all aspects of the urban formation. As recent work in urban environmental history has implicitly alluded, and political ecology has explicitly argued, every city is a type of socionatural hybrid, a kind of urban ecology. Different people appropriate nonhuman nature and bring it within urban circuits fraught with specific constellations of power and riddled with inequalities of access and distribution.⁴³ Urban formations are fundamentally material, but they are also cultural and political insofar as certain classes and groups of people face different environmental conditions and envision distinct—and often contradictory—uses and practices for metropolitanized environments. In Mexico City the élan of urbanization and the quest for urban hygiene interlaced city and hinterland into a vast metropolitan environment, over which campesinos, urban residents, environmental planners, and government officials wrangled. It is crucial that scholars study the historical formation of metropolitan environments; it is out of these hybrid landscapes that solutions for a democratic urban sustainability must emerge.

Mexico City’s environmental history is also the history of the Basin of Mexico. Urbanization has operated on multiple spatial scales, spanning the city and its hinterlands.⁴⁴ One main objective here is to explain how urban and hinterland populations became entangled in and joined to a material and discursive framework that rotated around urban sanitation—physical infrastructure, new settlements, commodity flows, federal property markers, and legal codes—and the social rights forged in revolutionary convulsion. This is not to say the city core and its hinterland, what Lefebvre would call the “larger urban fabric,” were one and the same. There were also important disjunctures across the metropolitan space: different modes of survival, diverse popular political aims, varied responses by elite groups, and divergent ecological changes. Nor is it to say that city and hinterland were static entities; population growth and real estate speculation swallowed whole towns and villages, and the quest for additional resources integrated new hinterland spaces into metropolitan development, processes that quickened in the 1940s.

This environmental history of the Porfiriato and the revolution politicizes the history of urban sanitation, moving beyond conventional stories of tech-

nical achievement or environmental destruction to address the interaction between state formation and popular environmental politics.⁴⁵ Environmental planners, eager to sanitize Mexico City, united with the government, which gained immense authority over landscapes and the people inhabiting them. Porfirian urban sanitation constituted an essential ingredient in the territorialization of state power, a process fundamentally about the government's capacity to use technocratic agencies and commissions to include or exclude "people within particular geographic boundaries, and . . . [control] what people do and their access to natural resources within those boundaries."⁴⁶ Modern states have delineated the parameters of environmental politics, and the Basin of Mexico, where the Mexican state invested in soil, water, and trees to facilitate capitalist urbanization, was a prime example.⁴⁷ State agencies, by reworking and regulating nonhuman nature, did more than arbitrate capitalist struggles over space, à la Marxist critical geography. They directly caused environmental change and conflict in their own right.

Lest this discussion devolve into overwrought state reification, it is important to keep in mind that the governing bodies that territorialized power were born of and beholden to historical conjuncture and social contention. They were part of society, not ontologically separate from it. These diverse agencies served a legitimizing role, providing leaders with the authority to sanction and affirm uses of nonhuman nature and urban infrastructure through ideology and regulation. Relatedly, they served a redistributive function after 1910, when the burgeoning and multifaceted politics of rights (access to fertile soil, water, and forests) and healthy living spaces (access to hygienic housing) became the linchpin of state formation in the urbanizing basin.⁴⁸ Between 1912 and 1940, the interplay among state officials, environmental planners, and diverse popular groups led to more environmentally just visions of metropolitan growth, manifested not just in words but in government programs, public works projects, and specific policies. Yet these visions were also ephemeral, incomplete, and ridden with contradictions. Postrevolutionary administrations followed in familiar Porfirian footsteps; they continued to support capitalist urbanization and technocratic solutions to environmental problems, squelching alternatives advanced from above and below alike.

The book is divided into two parts. The first part, "The Making of a Metropolitan Environment," consists of two chapters. Chapter 1 explains the rise of a new and influential cadre of environmental planners who implemented

urbanization codes, promoted conservationist forestry policies, and executed massive hydraulic projects to sanitize Mexico's capital, spread health and hygiene, and support urban capitalism. These interventions tied together the city and the greater hinterland of the basin more tightly than ever before. While the making of the sanitary city under Porfirian rule accentuated environmental inequalities by enclosing common lands and limiting sanitary-service extensions, planners strengthened state authority over the metropolitan environment and enwrapped the inhabitants of the Basin of Mexico within an urban-sanitary framework that molded later environmental disputes. Chapter 2 places this new metropolitan environment in the context of the revolution of 1910, when emerging political and discursive practices about environmental rights challenged elite rule over landscapes. State authority, in short, adapted to the popular revolution.

The second part, "Spaces of a Metropolitan Environment," tracks the social and scientific disputes over the nature and direction of urban growth in different—yet interconnected—landscapes around the urbanizing basin from 1917 to about 1940. Chapter 3 is organized around the tenant strike of 1922 and the water riot in downtown Mexico City later that year, which was provoked by a breakdown in the system that brought fresh hinterland spring water to urban taps. I show how the quest for hygienic, affordable homes in postrevolutionary Mexico City was enmeshed with the growth economy of urban real estate and the climate of social reform. The protests of 1922 failed to democratize sanitary services; instead, they led authorities to experiment with urban politics and revive technocratic governance.

Chapter 4 follows many of the same environmental planners involved in sanitary-service provision into the forests surrounding the city. There, they sought a balance between forest conservation, which they linked to urban hygiene, and the customary forest rights of communities recently empowered by the revolution. From 1916 to 1940, foresters, agrarian officials, and the campesinos of numerous pueblos negotiated use of and access to the woodlands along the rim of the Basin of Mexico, spaces that environmental planners believed were essential for safeguarding Mexico City's development.

As planners sought to protect dwindling forests, they also confronted the consequences of their draft-and-drain paradigm: especially the desiccation of Lakes Xochimilco and Texcoco, which diminished agricultural production and aggravated dangerous dust storms. This is the subject of chapter 5, which examines the agroecological changes around Lake Texcoco and zeroes in on

the brief convergence between the state's interest in transforming Lake Texcoco's saline soils for urban hygiene and campesinos' farming interests during the *sexenios* (six-year terms) of Lázaro Cárdenas (1934–1940) and Manuel Ávila Camacho (1940–1946).

The city began to encroach on the flood- and dust-prone Texcoco lakebed during the 1930s, and in chapter 6 I explore the revolutionary politics of urban housing and sanitation in impoverished settlements. Urban environmental inequalities, particularly around housing and services, combined with rising expectations of government intervention to foster the emergence of radical architects and popular organizations that fought for hygienic and comfortable living spaces free from the yoke of landlords and speculators.

This period of vibrant popular politics and disparate movements for environmental equality did not last. Chapter 7 examines the emergence in the 1940s of a techno-bureaucratic alliance of planners and state authorities that suffocated calls for more equal urban growth, further eroding environmental rights.

NOTES

INTRODUCTION

- 1 See Adriana Zavala, "Mexico City in Juan O'Gorman's Imagination," *Hispanic Research Journal* 8, no. 5 (December 2007): 491–506.
- 2 Ana Isabel Pérez Gavilán, "Chávez Morado, destructor de mitos: Silencios y aniquilaciones de la ciudad (1949)," *Anales del Instituto de Investigaciones Estéticas* 87 (2005): 83–89.
- 3 Arturo Sotomayor, *La metrópoli mexicana y su agonía* (Mexico City: UNAM, 1973).
- 4 Octavio Paz, "Return to the Labyrinth of Solitude," in *The Labyrinth of Solitude*, trans. Lysander Kemp (New York: Grove, 1985), 344.
- 5 Jorge Ibargüengoitia, "Call the Doctor," in *The Mexico City Reader*, ed. Rubén Gallo and Lorna Scott Fox (Madison: University of Wisconsin Press, 2004), 195–196.
- 6 Carlos Monsiváis, "Identity Hour," in *The Mexico Reader: History, Culture, Politics* (Durham, NC: Duke University Press, 2002), 616. See also Carlos Monsiváis, *Apocalipstick* (Mexico City: Debate, 2009), 19–21.
- 7 I will generally use the term *Basin of Mexico*, rather than *Valley of Mexico*, to better represent the geographical features of the area of study.
- 8 G. F. Lyon, *Residencia en México, 1826: Diario de una gira con estancia en la República de México* (Mexico City: FCE, 1984), 200.
- 9 Carl Christian Becher, *Cartas sobre México: La República Mexicana durante los años decisivos de 1832–3* (Mexico City: UNAM, 1959), 77–79. See also Fanny Calderón de la Barca, *La vida en México* (Mexico City: Porrúa, 1979), 37–38.
- 10 Brantz Mayer, *México: lo que fue y lo que es*, trans. Francisco Delpiane (Mexico City: FCE, 1953), 53–56.
- 11 Ramón I. Alcázar, *Poesías de Ramón I. Alcázar* (Mexico City: Imprenta de I. Cumplido, 1860), 96–98.
- 12 Antonio García Cubas, *Cuadro geográfico, estadístico, descriptivo e histórico de los Estados Unidos Mexicanos* (Mexico City: Secretaría de Fomento, 1885), 234;

- Geografía e historia del Distrito Federal* (Mexico City: Murguía, 1892), 44–75. For an environmental angle on Velasco, see Jorge Cañizares Esguerra, *Nature, Empire, and Nation: Explorations of the History of Science in the Iberian World* (Stanford, CA: Stanford University Press, 2006); Peter Kreiger, ed., *Transformaciones del paisaje urbano en México: Representación y registro visual* (Mexico City: MUNAL, 2012).
- 13 See Alexander von Humboldt, *Ensayo político sobre el Reino de la Nueva España* (Mexico City: Porrúa, 1984), 369–370; Calderón de la Barca, *Vida en México*, 371.
 - 14 William Denevan, “The Pristine Myth: The Landscape of the Americas in 1492,” *Annals of the Association of American Geographers* 82, no. 3 (September 1992): 369–386; Ángel Palerm, *Obras hidráulicas prehispánicas en el sistema lacustre del valle de México* (Mexico: INAH, 1973); J. A. Poumaredé, *Desagüe del valle de México* (Mexico: Imprenta de I Cumplido, 1860), 23; William T. Sanders, Jeffrey R. Parsons, and Robert S. Santley, *The Basin of Mexico: Ecological Processes in the Evolution of a Civilization* (New York: Academic Press, 1979), 284; Vera Candiani, *Dreaming of Dry Land: Environmental Transformation in Colonial Mexico City* (Stanford, CA: Stanford University Press, 2014).
 - 15 Jesús Galindo y Villa, *Historia sumaria de la ciudad de México* (Mexico City: Editorial Cultura, 1925), 209.
 - 16 Galindo y Villa, *Historia sumaria*, 210.
 - 17 *Metropolitan environment* is an adaptation of *metropolitan nature*, explained by Matthew Gandy, *Concrete and Clay: Reworking Nature in New York City* (Cambridge, MA: MIT Press, 2002), 2; Stéphane Castonguay and Michèle Dagenais, introduction to *Metropolitan Natures: Environmental Histories of Montreal*, ed. Stéphane Castonguay and Michèle Dagenais (Pittsburgh: University of Pittsburgh Press, 2011), 1.
 - 18 Henri Lefebvre, *The Urban Revolution*, trans. Robert Bononno (Minneapolis: University of Minnesota Press, 2003).
 - 19 Lewis Mumford, quoted in Andrew C. Isenberg, “New Directions in Urban Environmental History,” in *The Nature of Cities: Culture, Landscape, and Urban Space*, ed. Andrew C. Isenberg (Rochester, NY: University of Rochester Press, 2006), xii.
 - 20 Manuel Orozco y Berra, *Memoria para la carta hidrográfica pare el valle de México*, ed. Manuel Orozco y Berra (Mexico City: A. Boix, 1864), 143.
 - 21 Roberto Gayol, *Proyecto de desagüe y saneamiento para la ciudad de México* (Mexico City: Fomento, 1892), 31.
 - 22 Orozco y Berra, *Memoria*, 108–115; Antonio Peñafiel, *Memoria sobre las aguas potables de la capital de México* (Mexico City: Secretaría de Fomento, 1884), 129; Leopoldo Río de la Loza, “Un vistazo al lago de Tetzco: Su influencia en la salubridad de México,” in Orozco y Berra, *Memoria*, 179.
 - 23 Peñafiel, *Memoria*, 129.
 - 24 Quoted in Moisés González Navarro, “México en una laguna,” *Historia Mexicana* 4 (1955): 507.

- 25 Peñafiel, *Memoria*, 23–24; Luis Salazar, “On the Distribution of Water in the City of Mexico,” trans. Alfred Sears, *Transactions of the American Society of Civil Engineers* 3, no. 1 (1892): 336–338.
- 26 José Lorenzo Cossio, “Las aguas de la ciudad,” *Boletín de la Sociedad Mexicana de Geografía y Estadística* 45 (1935–1937): 40.
- 27 Cossio, “Aguas de la ciudad,” 40; Ariel Rodríguez Kuri, “Gobierno local y empresas de servicios: La experiencia de la ciudad de México durante el Porfiriato,” in *Ferrocarriles y obras públicas*, ed. Priscilla Connolly and Sandra Kuntz Ficker (Mexico City: Instituto Mora, 1999), 172; Alain Musset, *El agua en el valle de México, siglos XVI–XXVIII* (Mexico City: Pórtico de la ciudad de México, 1992), 87.
- 28 See José Lorenzo Cossio, *Guía retrospectiva de la ciudad de México*, 2nd ed. (Mexico City: Segumex, 1990), 139. The number of public fountains is from 1887. See Archivo Histórico del Distrito Federal (AHDF): Ayuntamiento, Aguas, Fuentes Públicas, 59/143, “Informe de la Comisión de Agua,” April 19, 1887.
- 29 Angus Wright, *The Death of Ramón González: The Modern Agricultural Dilemma* (Austin: University of Texas Press, 2005), 159.
- 30 María Eugenia Terrones López, “La ciudad de México y su hinterland: El círculo virtuoso,” in *Problemas de la urbanización en el valle de México, 1810–1910*, ed. Mario Barbosa and Salomon González (Mexico: UAM-Cuajimalpa, 2009), 94.
- 31 Orozco y Berra, *Memoria*, 149.
- 32 Terrones López, “Ciudad de México,” 107; Richard Conway, “Lakes, Canoes, and the Aquatic Communities of Xochimilco and Chalco, New Spain,” *Ethnohistory* 59, no. 3 (summer 2012): 547.
- 33 Ignacio Pozo, *Informe sobre el ramo de aguas presentado al ayuntamiento de 1887* (Mexico City: Ireneo Paz, 1888), 7–14; AHDF: Ayuntamiento, Aguas, Desierto de los Leones and Santa Fe, 53, 22, “Dictamen del Ayuntamiento de Santa Fe,” May 21, 1880; AHDF: Ayuntamiento, Aguas, Cuajimalpa, 50, 25, “Guardamontes to Comisión de Agua,” March 1, 1874.
- 34 For a similar perspective, see Claudia Agostoni, *Monuments of Progress: Modernization and Public Health in Mexico City, 1876–1910* (Calgary: University of Calgary Press, 2003), 41.
- 35 See Mark D. Szuchman, “The City as Vision: The Development of Urban Cultures in Latin America,” in *I Saw a City Invincible: Urban Portraits of Latin America* (Wilmington, DE: Scholarly Resources, 1996), 1–32; Eric Zolov, “Notas sobre la capital en su contribución hegemónica,” in *Los últimos cien años, los próximos cien . . .*, ed. Ariel Rodríguez Kuri and Sergio Tamayo Flores Alatorre (Mexico City: UAM, 2004), 111–126. There were certain conservative elements that idealized country living and vilified city life. Politician and writer Federico Gamboa best illustrated this take on Porfirian Mexico in his popular novel *Santa*. Gamboa, *Santa: A Novel of Mexico City*, trans. John Charles Chasteen (Chapel Hill: University of North Carolina Press, 2010).

- 36 For the purpose, design, and construction of sanitary infrastructure in U.S. cities, see Martin M. Melosi, *The Sanitary City: Urban Infrastructure in America from the Colony to the Present* (Baltimore: Johns Hopkins University Press, 2000).
- 37 For Mexico, see, among others, Pablo Piccato, *City of Suspects: Crime in Mexico City, 1900–1931* (Durham, NC: Duke University Press, 2001); Katherine Bliss, *Compromised Positions: Prostitution, Public Health, and Gender Politics in Revolutionary Mexico City* (University Park, PA: Penn State University Press, 2001); John Lear, *Workers, Neighbors, and Citizens: The Revolution in Mexico City* (Lincoln: University of Nebraska Press, 2001); Andrew Grant Wood, *Revolution in the Street: Women, Workers, and Urban Protest in Veracruz, 1870–1927* (Wilmington, DE: SR Books, 2001); Michael Snodgrass, *Deference and Defiance in Monterrey: Workers, Paternalism and Revolution in Mexico, 1890–1950* (Cambridge: Cambridge University Press, 2003); Ariel Rodríguez Kuri, *Historia del desasosiego: La revolución en la ciudad de México* (Mexico City: Colegio de México, 2010); María Dolores Lorenzo Río, *El estado como benefactor: Los pobres y la asistencia pública en la ciudad de México, 1877–1905* (Mexico City: Colegio de México, 2011). For the rest of Latin America, see, for example, Ernesto Capello, *City at the Center of the World: Space, History, and Modernity in Quito* (Pittsburgh: University of Pittsburgh Press, 2011); Brodwyn Fischer, *A Poverty of Rights: Citizenship and Inequality in Twentieth-Century Rio de Janeiro* (Stanford, CA: Stanford University Press, 2008); Silvia Arrom and Servando Ortol, eds., *Riots in the Cities: Popular Politics and the Urban Poor in Latin America, 1765–1910* (Wilmington, DE: Scholarly Resources, 1996); Germán Mejía Pavony, *Los años del cambio: Historia urbana de Bogotá, 1820–1910* (Bogotá: Universidad Javeriana, 2000).
- 38 See Manuel Perló Cohen, *El paradigma porfiriano: Historia del desagüe del valle de México* (Mexico City: Porrúa, 1999); Agostoni, *Monuments of Progress*; Lise Sedrez, “The Bay of All Beauties: State and Environment in Guanabara Bay, Rio de Janeiro, Brazil, 1875–1975” (PhD diss., Stanford University, 2004); Germán Palacios Castañeda, ed., *Historia ambiental de Bogotá y la Sábana, 1850–2005* (Bogotá: Universidad Nacional de Colombia, 2008).
- 39 Mark Healey, *The Ruins of the New Argentina: Peronism and the Remaking of San Juan after the 1944 Earthquake* (Durham, NC: Duke University Press, 2011); Patricia Olsen, *Artifacts of Revolution: Architecture, Society and Politics in Mexico City, 1920–1940* (Lanham, MD: Rowman and Littlefield, 2008).
- 40 Chris Otter, “Locating Matter: The Place of Materiality in Urban History,” in *Material Powers: Cultural Studies, History and the Material Turn*, ed. Tony Bennett and Patrick Joyce (New York: Routledge, 2010). For another important theoretical exegesis on the materiality of urban life, see Ellen Stroud, “Does Nature Always Matter? Following Dirt through History,” *History and Theory* 42, no. 4 (2003): 75–81.
- 41 See Marina Alberti, *Advances in Urban Ecology: Integrating Humans and Ecological Processes* (Boston: Springer Science, 2008); Ingrid Leman-Stefanovic and Stephen B. Scharper, eds., *The Natural City: Re-envisioning the Built Environment*

- (Toronto: University of Toronto Press, 2012); Jared Orsi, *Hazardous Metropolis: Flooding and Urban Ecology in Los Angeles* (Berkeley: University of California Press, 2004); Anna Zimmer, "Urban Political Ecology: Theoretical Concepts, Challenges, and Suggested Future Directions," *Erdkunde* 64, no. 4 (October–December 2010): 343–354; Gandy, *Concrete and Clay*; Nik Heynen, Maria Kaika, and Erik Swyngedouw, eds., *In the Nature of Cities: Urban Political Ecology and the Politics of Urban Metabolism* (London: Routledge, 2006); Matthew Klinge, *Emerald City: An Environmental History of Seattle* (New Haven, CT: Yale University Press, 2007).
- 42 Hillary Angelo and David Wachsmuth, "Urbanizing Urban Political Ecology: A Critique of Methodological Cityism," in *Implosions/Explosions: Towards a Study of Planetary Urbanization*, ed. Neil Brenner (Berlin: Jovis, 2014), 372–385.
 - 43 For the founding text of socionatural hybridity, see Bruno Latour, *We Have Never Been Modern* (Cambridge, MA: Harvard University Press, 1993). Recent works by Erik Swyngedouw, Nik Heynen, and other urban political ecologists have politicized the notion of hybridity along Marxist lines. A key text on hybridity within environmental historiography is Richard White, "From Wilderness to Hybrid Landscapes: The Cultural Turn in Environmental History," *Historian* 66, no. 3 (2004): 557–564.
 - 44 Several environmental historians have dissected city-hinterland relationships. See, for example, Ellen Stroud, *Nature Next Door: Cities and Trees in the American Northeast* (Seattle: University of Washington Press, 2012); Karl Appuhn, "Friend or Flood? The Dilemmas of Water Management in Early Modern Venice," in *The Nature of Cities*, 79–102; Andrew C. Isenberg, "Banking on Sacramento: Urban Development, Flood Control and Political Legitimization, 1848–1862," in *The Nature of Cities*, 103–121; Castonguay and Dagenais, *Metropolitan Natures*; William Francis Deverell and Greg Hise, eds., *Land of Sunshine: An Environmental History of Metropolitan Los Angeles* (Pittsburgh: University of Pittsburgh Press, 2005); Andrew Needham, *Power Lines: Phoenix and the Making of the Modern Southwest* (Princeton, NJ: Princeton University Press, 2014); Andrew Needham and Allen Dieterich-Ward, "Beyond the Metropolis: Metropolitan Growth and Regional Transformation in Postwar America," *Journal of Urban History* 35, no. 7 (2009): 944–969. These works took up William Cronon's earlier assertion about Chicago that the urban and the rural "created each other [and] transformed each other's environments." Cronon, *Nature's Metropolis: Chicago and the Great West* (New York: W. W. Norton, 1991), 384.
 - 45 In my analysis of and conclusions regarding postrevolutionary state formation, I borrow from the neopopulist school of thought on the Mexican Revolution. The classic text is Gilbert M. Joseph and Daniel Nugent, eds., *Everyday Forms of State Formation: Revolution and the Negotiation of Rule in Modern Mexico* (Durham, NC: Duke University Press, 1994).
 - 46 Peter Vanderveest and Nancy Lee Peluso, "Territorialization and State Power in Thailand," *Theory and Society* 24, no. 3 (June 1995): 388.

- 47 For the importance of material nature to state formation in relation to forest management, see Karl Appuhn, "Inventing Nature: Forests, Forestry, and State Power in Renaissance Venice," *Journal of Modern History* 72, no. 4 (2000): 861–889.
- 48 On the question of the state system and the ways legitimacy is obtained through sanction and affirmation, see Philip Abrams, "Notes on the Difficulty of Studying the State," *Journal of Historical Sociology* 1, no. 1 (March 1988): 58–89; Goran Therborn, *The Ideology of Power and the Power of Ideology* (London: Verso, 1999). There is a growing list of works that engage the environmental history of the Mexican Revolution, although rarely through the lens of urbanization. See Christopher R. Boyer and Emily Wakild, "Social Landscaping in the Forests of Mexico: An Environmental Interpretation of Cardenismo, 1934–1940," *Hispanic American Historical Review* 92, no. 1 (February 2012): 73–106; Alejandro Tortolero Villaseñor, "Water and Revolution in Morelos, 1850–1915," in *A Land between Waters: Environmental Histories of Modern Mexico*, ed. Christopher R. Boyer (Tucson: University of Arizona Press, 2012), 124–149; Luis Aboites Aguilar, *El agua de la nación: Una historia política de México (1888–1946)* (Mexico City: Centro de Investigaciones y Estudios Superiores en Antropología Social, 1998); Myrna Santiago, *The Ecology of Oil: Environment, Labor, and the Mexican Revolution, 1900–1938* (Cambridge: Cambridge University Press, 2006); Mikael Wolfe, *Watering the Revolution: An Environmental and Technological History of Agrarian Reform in Mexico* (Durham, NC: Duke University Press, 2017); Emily Wakild, *Revolutionary Parks: Conservation, Social Justice, and Mexico's National Parks, 1910–1940* (Tucson: University of Arizona Press, 2011).

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- 1 Raymond Craib, *Cartographic Mexico: A History of State Fixations and Fugitive Landscapes* (Durham, NC: Duke University Press, 2004), 22.
- 2 Mauricio Tenorio-Trillo, *I Speak of the City: Mexico City at the Turn of the Twentieth Century* (Chicago: University of Chicago Press, 2012).
- 3 In a similar vein, Karl Offen employs the term *geographical imagination* in his history of Mosquitia, Nicaragua, to underscore elite ideas of how nature should be used to support economic progress over so-called backwardness. See his "The Geographical Imagination, Resource Economies, and Nicaraguan Incorporation of the Mosquitia, 1838–1908," in *Territories, Knowledges, and Commodities: Latin American Environmental History in the Nineteenth and Twentieth Centuries*, ed. Christian Brannstrom (London: Institute of Latin American Studies, 2004), 51–52.
- 4 Antonio Peñafiel, *Memoria sobre las aguas potables de la capital de México* (Mexico City: Secretaría de Fomento, 1884), 78–79.
- 5 In this chapter I use the terms *sanitary planners* and *environmental planners* interchangeably.
- 6 See Manuel Perló Cohen, *El paradigma porfiriano: Historia del desagüe del valle de México* (Mexico City: Porrúa, 1999); Priscilla Connolly, *El contratista de don Porfirio: Obras públicas, deuda y desarrollo desigual* (Mexico City: Fondo de Cultura