

Introduction

Entering a New Era of Water Management

In 1977, California was facing a drought. By then, California water politics already bordered on legend. The Oscar-winning movie *Chinatown* (1974) had dramatized the politics, treachery, and straight-up lies used to appropriate this life-giving, profitable liquid. Jerry Brown, California's youngest governor in a century, was no stranger to the drama. His father, Pat Brown, had helped to create this corrupt water dynamic in California when he was governor. The elder Brown had pulled off political sleights of hand few had had the gall to try, including misrepresenting the costs of water projects on the order of billions of dollars.¹ This sort of subterfuge is an option when there is water to be had (or taken), but backroom deals don't count for much when there isn't. Such was the case in 1977. That year, the younger Brown convened the Governor's Conference on the California Drought. He invited Luna Leopold, the first chief hydrologist of the U.S. Geological Survey and then a professor at the University of California, Berkeley, to deliver the keynote address.

Luna took the stage not only as a leading American hydrologist but also as the son of Aldo Leopold—the ecologist whose work on soil conservation was cited when President Franklin D. Roosevelt was looking for ways to keep America's land from blowing away during the Dust Bowl of the 1930s.² Luna's speech began by arguing that the overlapping of economics, geography, and culture meant that “none of us knows how to put into operation a philosophy of water management, but there may be some merit in examining some of the elements that might be included in such a philosophy.”³ For Luna, the first step was to scale our expectations, and our water use, way back—a task that required cultivating a reverence for rivers. Luna repeated this message often, emphasizing the idea that there is an “unwritten gut feeling that the resources of the planet, and of the nation, are worthy of husbandry—indeed are es-

sential to our long-term well being.”⁴ Although Luna repeated his message time and again, he didn’t hold out a lot of hope that things wouldn’t get worse before getting better.

In 2015, drought returned with a vengeance to California. Jerry Brown was governor once again, this time as the oldest governor ever elected in the state. The 2015 drought, however, was different. Experts argued that it was an outcome of human actions that had changed Earth’s climate.⁵ So not only were the politics of water management once more unavoidable, it was also likely that the lessons learned historically might not be applicable in the future. In this context, Luna’s idea of a “reverence for rivers” appears almost quaint, and his belief that a philosophy of water management is too complex to be developed seems obvious. The reasons abound: There are too many political, economic, and cultural values layered on top of too many water demands, often too little supply, and too many gaps in policy and knowledge. Plus, water flows. It won’t sit still. It won’t even stay a liquid. Water’s shape-shifting ways make it too hard to ferret out what it is doing in the cavities it occupies among humans, non-humans, and the environment—let alone to manage all of those weird spaces. At best, water management is a bricolage of ideas, norms, strategies, and techniques. In sum, as Luna argued, a philosophy of water management sounds nice, but it is just too ambitious.

The global numbers seem to support Luna’s take, especially as human water uses accelerate in ever more complex and profligate ways. By the mid-1990s, humans collectively appropriated half of the Earth’s annual supply of accessible freshwater, largely as the result of water use increasing at several times the rate of population growth in the twentieth century.⁶ In some places consumption rates have leveled off, and even declined, but often because water demands shifted spatially as industrial processes moved locations. Complicating matters is the highly variable impact of human activities. On a summer day in the United Kingdom, anywhere from 50 to 80 percent of water in some rivers is treated wastewater, released from daily detours through urban and industrial toilets.⁷ On a similar day on Canada’s prairies, up to 50 percent of stream flow comes from water imprisoned in a millennia-long sentence in glaciers that, like many worldwide, are shrinking rapidly from global warming.⁸ Evidence of human interference with global water systems is striking, including water shortages in Rio de Janeiro, the empty Aral Sea, and the

cavalcade of fifty thousand large dams built and untold multitudes of people displaced by them over the last century to usher in modernity, to name only a few.

Against this backdrop, in 2008, leading hydrologists openly questioned whether water is manageable at all.⁹ From a hydrological perspective, water had been manageable because the water cycle was assumed to be stable, with variability from year to year fluctuating within natural limits. But on a planet where humans were changing the climate, the assumption of hydrological stability couldn't be maintained. Climate change, the hydrologists argued, did not simply change the patterns of water's natural variability. Rather, changing the climate altered the Earth system itself. The knock-on effect was that the very idea of a stable water cycle was thrown into a tailspin because, if the Earth itself is not operating within natural limits, then neither is the global hydrological cycle. Unfortunately, water is not entirely unique in this regard. Scientists now caution that we must seek a "safe operating space" in which humans live within the planetary boundaries of the Earth system and the interconnected dynamics of climate, freshwater, and global biogeochemical cycles.¹⁰ All told, scientists argue that we are now part of an "unfolding water drama" that requires new ways of managing water in the Anthropocene—a term used to describe how humans now rival the great forces of nature and are themselves a geological force.¹¹ The evidence seems to bear out Leopold's claim that there is no overarching logic to humanity's audacious water grab. In 2015, a study in the journal *Science* found that human water impacts had been underestimated by 20 percent—the equivalent of two-thirds of Earth's largest river, the Amazon—every year.¹² Given these facts, rather than marshaling a comprehensive water management philosophy, the prevailing wisdom is that the best we can do is to work piecemeal toward something better.

This book takes the opposite view. Its aim is to show that many water problems are, in important ways, the outcome of a philosophy of water management that already exists. Indeed, there is already a philosophical basis connecting culture, geography, and economics to a view of water management that began in the United States and has now gained global reach. Though it has not been recognized as such, this philosophy has enrolled various academic disciplines in its service, including, but not limited to, anthropology, economics, geography, and geology.

To illuminate this philosophy, I follow anthropologists who approach water as a “total social fact” that ricochets throughout multiple aspects of social life, albeit often in unseen and underappreciated ways.¹³ As it happened, when the philosophy of water management was in its formative stages, early American anthropologists had a similar idea. They, too, thought water was critical to all aspects of life, yet they also thought that not enough had been done to secure social and political institutions to Earth’s geological processes. For them, the way to secure U.S. society and its institutions to the absolute necessity of water was to treat it as a kind of total geological fact: Water was the agent that connected Earth’s geological processes to social life. To manage water, then, was to manage the conditions that made social life possible.

This philosophy of water management was initially articulated at the intersection of geology and early American anthropology: To manage water was to manage the bridge between life and non-life and, thereby, to shape the course of planetary evolution and social development. Furthermore, societies that knew this fact held an institutional advantage that proponents of the new philosophy claimed was an evolutionary step forward. The upshot was that these societies and their forms of life—their laws, institutions, practices, and customary habits of thought—were deemed the template for developing and managing water, not only for themselves, but also for the weal of evolution itself. Ultimately, this philosophy formed the basis for what is today called “global water governance.” The contention that there already exists a philosophy of water management and that it wields global influence is a bold claim. To support it, this book shows how a common way of thinking about water gained consensus. I term the project of assembling this common thinking “normal water”: a program for bringing water’s social and evolutionary possibilities into the service of liberal forms of life. By “liberal forms of life” I am talking about the spectrum that orders agreements and disagreements within liberalism, such as contests over how to balance individual freedom with collective security. As this book shows, these kinds of contests and their resolution were, and remain, central to how a particular approach to water management gained consensus.

Initially, crafting a common way to think about water was accomplished by categorizing it as a resource. This classification is now so common that it appears natural, but in the United States water was not

a “resource” until 1909. This relatively recent idea has had significant repercussions for other ways of understanding water that do not share with liberal forms of life ideas or practices regarding the secular basis for the rule of law, the priority assigned to individual autonomy, or the notions of rights, personhood, and property used to establish and maintain distinctions between private versus public spheres. Of course, there are many other aspects to how shared forms of life are practiced, yet because water is central to so many features of our individual and shared lives, universal claims about how to manage it have severe consequences. This fact is not lost on water managers. As this book details, the philosophy of water management was often developed with an appreciation—not always very nuanced—for how water interacts with alternate notions of subjectivity, social relationships, and the symbolic goods held as intrinsic ends by different groups. Although the consequences of directing water toward projects that supported their own cultural ideas were not lost on water managers, they still frequently rejected alternatives as either too metaphysical or, sometimes, just less developed. Yet despite their own pretenses to objectivity, water managers crafted their own myth around the belief that liberal societies are uniquely equipped to manage the vast array of social and evolutionary possibilities made available by water.

The myth of normal water—the aim of bringing water’s social and evolutionary possibilities into service of liberal forms of life—has led to several contradictions in the attempt to forge a global common sense regarding water. Here is one example: In 2010, the United Nations declared a human right to water and sanitation. At that time, there was much rejoicing by those who counted this right a victory over privatized, market-driven forms of managing and governing water. But the jubilation was short-lived. Shortly thereafter, the UN Secretary-General, Ban Ki-moon, stated that the human right to water was not counter to free-market rationality. In fact, he claimed, some of the best ways to deliver on this new right may actually be through markets. Experts explained this contradiction by identifying a common liberal heritage that defines public, human rights and the private property rights required for market transactions.¹⁴ So, what looked like a contradiction was in fact a debate over two ways of achieving broadly liberal goals of human dignity and social progress. Yet if this explanation is correct, we should

wonder not just how a common language of rights came to be used on both sides of a global debate but also how both sides came to have a common understanding of water.

We could explain this conundrum as an instance of liberalism's long history of contradictions, such as its early arguments that because slaves were private property the state could not simply make them free through guarantees of public rights.¹⁵ To do so, however, would miss how practices direct water toward certain goals and, thereby, enhance the prospects of meeting certain ends rather than others. Instead of theoretical answers to contradictions over water rights, we should consider how diverse and heterogeneous cultures settled on a particular understanding of water in these debates. We might follow Ludwig Wittgenstein, who argued that investigating the civil status of a contradiction is the task of philosophy.¹⁶ This book asks: How do contradictions over water, such as those over the right to water, gain civil status? Or, put another way, Why do we have these water management challenges and not others?

Normal Water

In his book, *The Taming of Chance*, Ian Hacking argued that gathering an avalanche of numbers about populations, their activities, and body sizes was part of moving away from ideas of “human nature” toward accounts of a “normal person.”¹⁷ Hacking was interested in how contingent social and natural phenomena were understood, accounted for, and subsequently governed. Along similar lines, this book examines how different types of contingency were, and still are, woven together through a philosophy of water management that crisscrosses over four senses of the word “normal”: (1) a sense that what is normal is a matter of social convention; (2) a technical sense of normal that comes from its use in describing a linear line that intersects some other line or surface; (3) a geologic sense in which normal denotes a relative downward movement by the tectonic plate on the high side of a fault line; and (4) an antiquated, medicinal sense of normal that referred to the ratio of solutes in water or blood.

In this book, “normal water” refers to the program of bringing water's social and evolutionary possibilities into the service of liberal forms of life. It is by gathering different kinds of social, technical, and geological

contingency into a common way of imagining the health of societies and the Earth that a particular philosophy of water management became normal. These crisscrossing claims are all buried within, and maintained by, the idea that water is a resource. In considering how claims from anthropology, economics, geography, geology, hydrology, and philosophy (to name a few) came together in an account of water's contingent relationships, it becomes evident that water management is not the haphazard bricolage Luna Leopold thought it was. There is, rather, an underlying philosophy that has been enormously successful precisely because it has not been seen as doing all of this coordinating work.

Exploring different senses of normal water reveals how culture, geography, and economics are linked in a philosophy of water management. For instance, "normal" can refer to social conventions: for example, turn the tap off when you are brushing your teeth. These conventions can run deeper, reflecting collective judgments regarding rights, politics, economics, or ritual. In some cases, judgments regarding water cannot easily be dissociated from particular ways of living without altering, or in some cases abandoning, those ways of living themselves. Normal water is also technical and concerns the choice and deployment of technological know-how, such as that used in the engineering of dams or irrigation works. In this sense, normal water orients a messy and complex world in a particular way. In its geological sense, normal water links biological and social life to accounts of planetary evolution. Finally, normal water relates social, technical, and geological considerations to concerns about health, both in the sense that ecohydrologists mean when they speak of water as "the bloodstream of the biosphere" and in the sense that all individuals and societies require water for healthy lives and livelihoods.¹⁸

Normal water, then, employs social, technical, and geological claims to link social and evolutionary possibilities to the health of liberal forms of life. But forms of life are neither static nor homogeneous, and so normal water has had to evolve alongside different iterations of liberalism within which American water managers have operated. In many ways, exchanges between water managers and state officials gave both academics and the state a common set of tools with which to think. In fact, there is a long history of experts like Luna Leopold moving between state agencies and scholarly communities. Once these connections are identified, it becomes more apparent that many water challenges are

not the result of some haphazard conglomeration. They are, rather, the outcome of a common way of thinking. As this book details, this way of thinking had its origins in the desire to manage water in purely evolutionary terms that linked the American social sciences to geology. In this way, it anticipated and is directly relevant to contemporary efforts to once again link anthropology, geography, and other social sciences (and humanities) to claims that the Earth has, or is on a trajectory to enter, a new geological moment: the Anthropocene.

Anticipating the Anthropocene

Earlier, I noted that the philosophy of water management was initially articulated at the intersection of geology and anthropology. This took place in the late nineteenth century, in the wake of Charles Lyell's identification of the geological epoch in which modern civilizations evolved. When it was announced in 1885, the Holocene—which means the entire or whole recent period—identified the planetary conditions since the last Ice Age and approximately captured human history after the agricultural revolution. Many thought that geology had profound implications for explaining how we should understand humans, the planet, and their study. There were also implications for how humans should care for the Earth and, thereby, for their own evolutionary prospects. Fast-forward to the twenty-first century, and we see similar concerns regarding a newly proposed geological classification, the Anthropocene, and its implications for the evolution of the planet and of life hereon.

In contrast to the Holocene idea of a planet that conditions human evolution, the Anthropocene is—proposed, at the time of this writing—a period meant to mark the epoch in which humans also significantly alter geological processes.¹⁹ The atmospheric scientist Paul Crutzen and the aquatic ecologist Eugene Stoermer coined the term “Anthropocene” in 2000.²⁰ The Anthropocene is a time in which humans have come to rival the great forces of nature and in which humanity's total share of Earth's material and energetic throughput has accelerated at a phenomenal rate.²¹ At present, there are two strong contenders for marking this change in the geologic record: radiation fallout from mid-twentieth-century nuclear testing, and the development of plastics.²² Both are uniquely human, and both will be around for a geologically

long time. But there are other potential markers, such as the increase in atmospheric carbon dioxide from human agricultural activity and fossil fuel use and the decrease in atmospheric carbon that occurred when vegetation surged in North and South America after colonial diseases swept through indigenous societies and killed millions.²³

The concern of this book is not with what “silver spike” is chosen to identify the Anthropocene (if indeed one or a set is chosen). In the aegis of geologic time, nuclear radiation, plastics, climate change, species extinction from habitat loss, and colonial atrocities may appear synchronously with other stratigraphic scars humans may leave behind. It’s difficult to predict, and none of us will be alive long enough to know, which brings up a different point: There is no scientific reason to make a decision about the Anthropocene now. We could wait a few millennia to see how things settle out geologically, which would afford all the advantages time may bring. But there is no appetite for waiting. Instead, there is a host of political, ethical, and scientific contests over the Anthropocene that are often articulated alongside calls for an enhanced sense of planetary stewardship given the urgency of Earth’s ecological malaise.²⁴ As the historian Dipesh Chakrabarty put it, now that we have stumbled into the Anthropocene, there are all sorts of questions about how human histories intersect with geologic time.²⁵

The scale of human transformations of the Earth system troubles many widely held ideas. For instance, it was once presumed that Earth’s natural biomes functioned as a background to the foreground of human action, even if humans altered them over time. Human transformation of the Earth’s surface is now so extensive, however, that “anthromes” (human biomes) more accurately reflect what land cover looks like.²⁶ Like the idea of “natural variability” rejected by hydrologists owing to climate change, there is no background “nature” for biomes any longer. Similarly, new classification systems have introduced “novel ecosystems” as a way to categorize landscapes that reflect the effects of human activity on ecological processes.²⁷ These have been followed up with new ideas, like “anthroecology,” that seek to explain human ecology in geologic terms.²⁸ This attunement to the coevolution of people and planet is designed to index the Anthropocene to the human transformation of the biosphere.²⁹ The upshot is that there is no longer any ground, in a literal or metaphorical sense, upon which to make distinctions between humans and nature.³⁰

The philosopher Clive Hamilton has argued that dividing humans from nature is an outdated conceit of the modern social sciences that, to the extent that these disciplines are premised on that divide, is unfit for understanding the Anthropocene.³¹ As this book shows, Hamilton is not alone in thinking that the modern social sciences and humanities need a fundamental overhaul for use in this new geological era. The English professor Timothy Morton has also argued that in the Anthropocene there is no background place—no nature—that somehow persists “away” from anthropogenic activity and that this has significant implications for how we study the world.³² But we should note that ecofeminist, indigenous, and post-colonial scholars have long argued that the conceptual division of humans from nature operates on the same oppressive logic that renders other classes, genders, and peoples as subordinate and likewise deems their bodies, homes, and environments as “away.”³³ So it is not a novel claim to reject the society/nature dualism as unsound. Furthermore, and as this book shows, in the influential case of water, the problem is not the society/nature divide but, rather, a failed attempt to reject that dualism. This failed attempt braided unequal power relationships into ways that human-water relationships are understood in both the social and natural sciences that link water to the Earth system in the Anthropocene.

In addition to theoretical concerns over the society/nature dualism, the Anthropocene raises concerns regarding how the histories of the Earth and of human societies should be understood. There are two elements to this issue. One has to do with the conceptual history of the Anthropocene itself, and the second with how that history affects political and moral claims about what ought to be done about humanity’s outsized impact on the Earth system. On the first element, Clive Hamilton and Jacques Grinevald argue that the Anthropocene is a fundamentally novel idea that was not anticipated by previous geological understandings of nature or the environment.³⁴ In making this claim, they reject the conceptual history that had previously been offered for where the idea of the Anthropocene came from.³⁵ That history began with the idea of humans as geological agents offered by the famed ecologist George Perkins Marsh in his classic nineteenth-century work, *The Earth as Modified by Human Action*.³⁶ According to this history, once humans were seen as geological agents, the search for a unified account

of knowledge took a new form in which human knowledge was viewed as having an evolutionary history, too. The result was the concept of the “noösphere” developed by two Catholic theologians, Pierre Teilhard de Chardin and Édouard Le Roy. The latter was closely associated with the French philosopher Henri Bergson—who once adroitly claimed that the steam engine changed everything.³⁷ The noösphere, however, was developed most by Teilhard de Chardin, who posited that it was a realm of evolution in which some beings, like humans, become aware of their own evolutionary history in geological terms and, with that knowledge, consciously take up a specific evolutionary direction (though not necessarily a telos).³⁸

The idea of the noösphere influenced the Russian geochemist Vladimir Vernadsky, who saw it as a way to link life in general, and humanity in specific, with the Earth’s mineral and chemical processes. Vernadsky subsequently developed the concept of the biosphere, a key forerunner to global biogeochemistry and models of ecology that incorporated the wide array of interactions that different evolutionary actors have with one another.³⁹ Given this history of ideas about humans and geology, it is not too surprising to find a conceptual history of the Anthropocene that runs from Marsh through to Vernadsky. But Hamilton and Grinevald reject the claim that these earlier ideas anticipated the Anthropocene because they hold that these previous views did not treat the Earth as a system.⁴⁰ They argue that the conceptual novelty of the *Earth system* made the Anthropocene possible and that this only arose only in the latter half of the twentieth century, such as through large interdisciplinary collaborations that followed the creation of the Scientific Committee on Problems of the Environment by the International Council of Scientific Unions. These large scientific collaborations were paced by new concepts, such as James Lovelock’s “Gaia Hypothesis,” which posits that the Earth system is self-organizing.⁴¹

If we turn to the second element regarding the conceptual history of the Anthropocene, there is a contest over how to conceptualize the quantitative impacts of human activity on the Earth system in relation to the actions of the humans responsible for those impacts. The worry here is that claims about humanity writ large paper over the oppression of other cultures, other species, and the planet by those primarily responsible for the Anthropocene, and this motivates a subsequent claim

that any definition of a new geological era should reflect these political, economic, and moral dynamics.⁴² Of course, not every connection of humans and geology matter in the same way. If they did, the Anthropocene would be a grab bag of previous ideas, from the Harvard geologist Nathaniel Shaler's worry in 1905 that humanity's planet shaping force needed to be corralled in service to imperialism to Robert Sherlock's 1922 claim that the British landscape was shaped by humanity's unique geological agency while the rest of nature remained inanimate.⁴³ Part of the reason it is important to be aware of contests over the conceptual history of the Anthropocene, however, is because they can affect attitudes toward governing people, related institutions, and the planet that reflect broader value judgments about the kinds of knowledge most relevant to governing both societies and the Earth system.⁴⁴

The contention of this book is that, when it comes to water, the argument over whether the Anthropocene is conceptually novel or the outcome of incremental conceptual development that would link it to particular, culpable groups of humans that accelerated impacts of humans on the Earth system misses a key point: namely that, if it is possible for leading scientists to link the "unfolding water drama" of *any* human society to the Earth system, then there must be some common understanding of water across the Earth system sciences and water management. Indeed, it is a central claim of this book that there is such an understanding and that this common understanding has a history that begins in the late nineteenth century and winds its way into interdisciplinary scientific networks, including the Scientific Committee on Problems of the Environment, which conceptualized water as part of the Earth system in the twentieth and twenty-first centuries. As the Anthropocene took shape in the new millennium, this history is what makes it possible to think about water management in common ways across planetary hydrology and modernity's human dramas.

Book Overview, Structure, and Caveats

This book examines a philosophy of water management that began in the United States and expanded globally, though it has not been widely recognized. This philosophy began by rejecting older ideas as too metaphysical or at least too far down the evolutionary ladder of social

development to be seriously entertained. But the new philosophy has its own mythical elements; namely, the idea that liberal forms of life are uniquely equipped to manage the vast array of social and evolutionary possibilities made available by water. Of course, this water management philosophy did not emerge all at once, not least because even in its early stages it was expected that societies would evolve and that water management had to be capacious enough to develop alongside them. Since it began, however, this philosophy of water management has pivoted on crafting a story about geological, social, and technical understandings of water and the health of societies and the planet. This way of thinking, ensconced in the idea that water is a resource, is now commonplace globally.

As this common way of thinking about water took shape, it consolidated into a global narrative about water management. This narrative is often found at the beginning of policy statements or presentations from practitioners, academics, economists, hydrologists, and policy makers. Although it varies, the broad strokes of the narrative are that water was once abundant but has now become scarce. Mismanagement intensified water scarcity such that water is now a security issue that must be considered with respect to interstate conflict, human development, and planetary health. These propositions of water's abundance, scarcity, and security play a special role in the philosophy of water management, not least because they have been deployed beyond the United States in places such as Brazil and Israel and even to characterize global water problems.⁴⁵ These propositions are also important because they order water within a complex Earth system in ways amenable to, and constitutive of, a particular view of the world. To see how this is so, this book is structured to show how the philosophy of water management made claims about abundance, scarcity, and security that are now widely used and that find their ways into accounts of water in the Anthropocene.

Structure

The book has four parts that detail how a philosophy of water management that supports liberal forms of life brought water under a single, global scheme and what that implies for the Anthropocene. The genius of normal water's program of bringing social and evolutionary

possibility into a single planetary story is that it does not deny that alternatives exist but simply posits that we should do without them. In short, we should manage water resources without privileging any particular cultural understanding of human subjectivity, the different social relations that take shape around different water use practices, or the different symbolic ends that others may hold as intrinsically meaningful. These three philosophical concerns—over subjects, social relations, and symbolic goods—are developed in the first three parts of the book. Part IV returns to the Anthropocene with this history and philosophy in tow and examines what it implies for thinking anew about water.

Part I begins by situating this book among others on water management and outlines its methodological approach. It is critical of accounts that rely primarily on theories about modernity and that subsequently offer little consideration of how water management shaped what counts as modern. It then dives into the topic of water abundance, using the works of John Wesley Powell and William John McGee—who insisted that, to save ink, his name be written, unpunctuated, as WJ McGee—as the central foils through which water became a resource in the United States. They extended geological agency to water and people as part of a broader project in political economy and state formation. Quickly put, the philosophy of the subject articulated by Immanuel Kant was under scrutiny in the nineteenth century because of how it viewed the relationship of mind to matter. Also of concern was the task of exorcising British colonialism from American thought. In response, Powell, McGee, and many others sought an evolutionary account of the human subject in a universe without a mind/matter divide. Their view was that there is an abundance of geological agents, of which water was critical. Through close association with the White House and the upstart discipline of American anthropology, McGee transformed this view into the fulcrum for adjusting the liberal state to the task of managing water and for moving beyond colonialism. His view united water to the social characteristics of “the People” of the United States in service to his two most enduring ideas: conservation and multipurpose river basin development.

Part II considers water scarcity. It shows how one case of water management in the United States was generalized into a model for international development. To make this move, the temporal empha-

sis on geological abundance was reworked into a spatial sensibility that treated the United States as the model for post-colonial development. Earlier ideas were not abandoned, but they were reformulated in a view that drew (flawed) parallels between the U.S. experience and the post-colonial moment arising after World War II. It was no longer the characteristics of Americans that mattered but democratic methods for escaping colonial rule. The philosophy of water management subsequently shifted to support a new geopolitical register aimed at coordinating international development and to promote liberalism abroad, a salient aim throughout the Cold War. Water managers and geographers, particularly David Lilienthal and Gilbert White, were particularly influential in this period. This led to a series of international water decades during which a global picture of water began to be crafted in an effort to naturalize the American experience and to avoid the charge that it was simply colonialism in a new guise. By 1977, the global acceptance of scarcity was a founding proposition for water management.

Part III focuses on security, an idea that had been key to international development since its inception but that became especially important in the late twentieth and early twenty-first centuries. After the judgment that water is scarce, water experts worked to establish a metric for scarcity that did not privilege any particular set of social standards. But no consensus was achieved. Instead, the solution was to manage water without reference to the symbolic goods held as intrinsic ends by any particular society. This brought water security to the fore. Water security combined, in a reflexive moment, resource conservation and international development under the guise of sustainable development. Initially pursued through integrated water resources management (IWRM), the philosophy of water management subsequently morphed to include what became known as a “water-energy-food-climate nexus.” At the same time, water security encountered numerous challenges regarding the fit of global ideas with different cultural meanings of water. These tensions come to prominence during the UN Decade of “Water for Life” from 2005 to 2015 when, right in the middle, the human right to water and sanitation was passed in 2010.

Part IV returns to considerations of the Anthropocene, but with a closer look at how the social sciences are entangled with the “natural re-

sources” that mediate relationships between social worlds and the Earth system. It focuses on understandings of the Anthropocene in the social sciences. In particular, it questions the widely circulating idea that by “making things public” there are opportunities to move beyond the dualism dividing society from nature and to consider non-human agency more closely.⁴⁶ I argue that “making things public” is inadequate because it fails to see that water problems are the outcome of a failed nineteenth-century solution to the problems associated with the society/nature dualism. Building this line of argument into the final chapter, I argue that in many cases the most helpful project social science can undertake is to disrupt internally the ongoing colonial project of water management, especially in educational institutions that often reproduce it. I consider an example by returning us to a different Leopold—Aldo. In Aldo Leopold’s work there is an effort to disrupt the philosophical ideas of conservation and water management that carries broader lessons for the Anthropocene.

Caveats

A lot of what this book does not do, and what it expressly does not attempt to do, is tied to the methodology behind what it does. Detailed further in the next chapter, my approach follows Wittgenstein, particularly his insight that philosophical problems are bound up with practice—or, as in the example regarding rights to water above, the way a contradiction gains civil status. To understand contradictions over water we need to get a sense of the practices through which these contradictions are understood. But these practices change over time, and so do the meanings associated with them. As the epigraph to this book suggests, sometimes our mythology is put in flux, and the riverbed of thought shifts. Wittgenstein distinguished between the flux of water in a river and its underlying bed, even though there is no sharp division between them, as though the former is variable and the other stable.⁴⁷ Both are contingent, but both are necessary to have a river. Similarly, I argue, it was by finding ways to internalize the claims regarding social, technical, and geological contingencies, and their effects on human and planetary health, that water management lurched forward alongside the shifting riverbed of liberalism.

Given this orientation, this book does not adjudicate among the manifold ways that water crises or meanings of water can be understood.⁴⁸ Its argument is not premised on, or beholden to, inferences that frame water problems in one way that, by the end of the book, will reveal what a good philosophy of water management looks like. Rather, the aim is to understand how a view of water as radically contingent yet necessary for life became entangled with a set of practices deemed the most appropriate for enhancing the prospects of liberal forms of life. I take this approach because it is undeniably the case that water management practices entangle us together with others—those ambiguous combinations of (not merely) means and ends.⁴⁹ This entanglement beckons us to consider which others we are wound together with as we learn to make judgments about water in ways that shape a common world. Treating others with respect is not only, or even primarily, a theoretical task of exploring radical alterity. Nor does creating space for alternate water use practices imply that the U.S. water experience is or should be the reference point for establishing difference with respect to theories of modernity or of otherness. In the next chapter I say more about how I have reversed the onus so that, instead of thinking about water through a theory of modernity, we ask what questions arise for modernity as the result of water management practices.

The book relies significantly on historical sources. Yet I do not attempt to assemble a history of irrigation, land-cover change, or the ins and outs of different government policies or bureaucracies in the United States. There are many good resources on these topics, and I draw on them to provide further context to the work presented here. What distinguishes this book is its attempt to follow the threads of key philosophical practices that are latent in the consistent ability to link social, technical, geological, and health claims in water management. As a result, many of the individuals who feature prominently in the book may be unfamiliar even to water researchers and professionals. There are, of course, previous works that bridge from engineering and river-basin development to the social ideas that informed them.⁵⁰ This book attempts this on a larger scale. Similarly, this book is not a history of modern hydrology or of water and Earth system science. Again, however, I have worked to keep it conversant with these fields in order to show how understandings of the Earth were worked into claims about the world.

One unavoidable feature of the current global water milieu is the contentious debate about whether water is a public good or whether water, and the services that deliver it to people, should be privately owned or controlled. This book is not about that debate per se, but as already hinted at, I do seek to shed some light on why this debate has taken shape in the way it has. The line of thought I develop in this regard considers the way that understandings of what is public or private have been modified over time. Relatedly, I do not explore the implications of this work for decolonization or what political strategies may be made of human rights. This book focuses instead on a clearer diagnosis of the deep and persistent colonial roots of water management. A more contentious aspect of the book will be that it implicates ideas now widely held in water management and many academic disciplines as contributing to unequal power relations. But I have left open, and hopefully have helped to identify, spaces for place-based articulations, resentments, and resurgences appropriate to different responses to inequality. I have done this to highlight how normal water naturalizes social and evolutionary possibilities in a way that displaces and dispossesses alternate forms of life. In this way, the book links a particular way of making up the world to one of its constitutive elements—water—and the propositions of abundance, scarcity, and security that have been used to legitimate management practices.

A final caveat concerns the primacy given to the U.S. experience. This orientation is defended and qualified throughout the book, but a few comments are worth making here. The first is that the U.S. experience was influenced by many international sources. Americans traveled internationally, and many international figures and ideas came to the United States. International traffic in ideas, legal norms, technologies, and approaches to governance all influence American water management and things this book does not consider, such as the design of urban water systems.⁵¹ A second is that it is not only U.S. ideas that are influential internationally: The British and Dutch reconfigured landscapes in India, across East and West Africa, and in Java in the service of colonialism.⁵² French canal builders and German water engineers helped inaugurate forms of impersonal state rule.⁵³ Both Spanish and French approaches to watershed management predate certain developments in the United States.⁵⁴ China and Russia have been major players internationally, and

they remain so.⁵⁵ Clearly, then, U.S. water management does not have total or universal influence. In the next chapter I clarify the methodological components to this caveat in order to draw out how this book relativizes the U.S. experience without downplaying the significant role it has had in shaping common understandings of water as a resource.