

Introduction

What follows is a story about the world's first “water-exporting country,” a geopolitical category forged in the blast furnace of our planet's accelerating environmental crisis. It's an account of a system of water production, the contradictions that threaten to destroy it, and the many kinds of work required to hold it all together. Water is not simply captured behind dam walls and sold. It is *produced* like any other commodity. This production, I'll show, requires a theory of how water flows over land and into reservoirs in distant watersheds—and how people living in those landscapes therefore should comport themselves to encourage satisfactory flow. And, it requires a negotiation with local contexts—in this case the racial capitalism of South African apartheid. That's where I'll start.

THE TERRESTRIAL POLITICS OF WATER PRODUCTION

In 1986, the enclave state of Lesotho signed a treaty with South Africa for the Lesotho Highlands Water Project (LHWP), a multibillion-dollar scheme to construct a series of massive dams and tunnels that could carry water to Johannesburg. In remote and difficult terrain, some of the most sophisticated hydro-engineering in the world was deployed to make this export economy a reality. The small mountain kingdom is rarely thought of as a player on the “world stage,” yet there it stands at the vanguard of natural resource politics. Not by the bottle, but by the cubic meter per second, Lesotho services the subcontinent's parched industrial and commercial epicenter.

Exactly a century before that treaty was signed, the largest gold deposits in the world were found at the Witwatersrand, a craggy ridge that runs east-west through contemporary Johannesburg. Sparsely populated at that time, the rolling, semiarid grasslands that surround it featured no significant source of fresh water—much less enough for a water-intensive industry like gold mining—but the human population mushroomed with the rush to capitalize upon the promise of gold.

In the decades between these two historical moments—the gold rush and the water rush—the white supremacist political philosophy known as apartheid was instituted in South Africa for the conjoined project of segregation and exploitation: separating people by a hierarchy of racial types for the purpose of separating gold from the earth in which it was caught. Surrounded by South Africa, Lesotho was drawn into that apartheid project. Its national borders were leveraged by the mining industry to manage the flow of labor to South African mines, and the country was positioned as a labor reserve, a kind of holding tank for an army of surplus African workers.

This system fell apart with South Africa's hard-fought turn to democracy in the early 1990s, but just then another was being assembled to extract *water* instead. That system was designed according to a seemingly more defensible rationale—Lesotho's national sovereignty and development—though it inherited many of the same fixtures that spun the flywheel of this earlier machine: it relied on the construction and regulation of storage reservoirs, as well as the modulation and reassertion of ethno-national identities. It also inherited many of its problems and contradictions, including intense economic pressures and inequality.

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The supply of water, of course, is among the most concerning of “natural resource” issues in our present moment. Our world has been built according to a Holocene climate that was relatively stable. As we enter the Anthropocene, the proposed geologic epoch to follow the Holocene characterized by planet-wide environmental damage,¹ we find a world in which droughts and floods seem always equally plausible. It is a world with more people living in cities, more water-intensive mining and energy production, more water-intensive manufacturing, more water-intensive agriculture, and on and on. Lesotho's relationship to South Africa stands as a case study of the looming threats and possibilities of such a world. It illustrates how these shifting and patchy water geographies could potentially realign global relationships and commonsense understandings of water's value.² On the other hand, it could also further entrench and intensify the inequities of the status quo.

South Africa's contemporary water problems were thrust upon the global imagination during Cape Town's 2017–18 brush with “day zero,” a crisis that nearly brought that metropolis to a stop, and which stemmed from a combination of mismanagement and protracted drought.³

On the other side of the country, Johannesburg's crisis is equally severe. Were it not for transfers of water from Lesotho, Johannesburg and the entire Gauteng Province would have long ago been brought low. Its own day zero will surely come, however. Johannesburg is home to some 10 million people and aspires to become a “world city,” yet it has a very spotty record of water management, with nearly

40 percent of its water being forfeited to leaks and other losses.⁴ Forecasts predict a regional future that is hotter and even more drought-prone.⁵

Thankfully, proponents of Lesotho's water-export economy on both sides of the border explain, Lesotho has abundant water, and it only "uses" around one percent of its total 140m³/s capacity.⁶ With crisp economic logic, they describe the LHWP as a mutually beneficial agreement between South Africa and Lesotho: Lesotho has abundant water supply, and South Africa faces acute water demand. They argue that this international commodity exchange between the two countries not only can bring in revenues but can also bolster Lesotho's status as a sovereign territory.

In April 2014, I was in the highland town of Mokhotlong when then prime minister of Lesotho, Tom Thabane, held a *pitso*—an open-air speech and community-outreach meeting—as he had been doing for each of the country's ten administrative districts. With his typical good humor, he explained (in Sesotho) to the crowd how, when he met recently with South African prime minister Jacob Zuma, Thabane reminded him that "South Africa *needs* Lesotho—people in Joburg can't even take a piss without our water!" It got a good laugh from the crowd. Thabane was referencing the LHWP, as the two countries had signed an agreement just a month earlier to move forward with construction of the project's next phase: the colossal Polihali Dam, to be built just a few kilometers away from where he spoke. Ahead of the initial treaty in 1986 and ever since, there has existed an optimism among national elites that water export would elevate Lesotho's position in the region. This optimism was on display in Thabane's speech.

That the issue of Lesotho's sovereignty merited mention at all is testament to its weakness. Lesotho is simply not on equal footing in water-export negotiations with the country that envelops it; nor is it on many other matters, be it fiscal policy or border policy. If apartheid-era Lesotho was part of an infrastructure of economic production that sought to regulate the flow of labor, justified through a dubious logic of racial difference,⁷ Lesotho today is part of an infrastructure of economic production that seeks to regulate the flow of *water*, justified through a dubious logic of national sovereignty.⁸

Much as the early colonists of Africa and the Americas "found" a purportedly empty and therefore "underutilized" territory—*terra nullius*—so too has Lesotho's abundant water been delivered into productive use.⁹ In these settler framings, resource exploitation is presented as a bridge between states of nature and civilization, past and future—a kind of natural resource modernity. Large dams, described as "temples of modernity" by postcolonial figures such as India's independence leader Jawaharlal Nehru, are quintessential tools for this work,¹⁰ even though ironically dams have at times helped preserve colonial power well into the postcolonial period.¹¹ The Lesotho Highlands Water Project, too, promises to transcend old barriers to Lesotho's self-determination. The notion of *water abundance* is its stepping stone.

Alas, as I will show in the chapters that follow, the export of this abundant water reinscribes the racial nationalism that has long governed the subcontinent.¹²

Authors who have scrutinized accounts of water “scarcity” and “abundance” have shown that these designations are technological and political artifacts rather than self-evident calculations.¹³ Examining the everyday work of managing and allocating water, those anthropologists and geographers working in water studies have helped us to understand that, while water volumes in a reservoir may be absolute numbers, downstream these figures take concrete shape in relation to political terrain. Into the downstream urban or agricultural matrix, a network of pipes and valves—an infrastructure of distribution—determines who has access to this water.¹⁴

Building on that work, this book instead turns upstream to examine infrastructures of *production*, where a landscape of soils and of vegetation, of livestock and of people, of identities and of citizenships, of croplands and of wetlands determines how much water enters the reservoir and at what cost. Raising livestock like cattle, sheep, and goats has long been an important accessory to rural livelihoods, alongside labor migration to the mines. Whereas it was once a retirement activity, however, producing wool, mohair, and meat has turned into a primary occupation since the decline of mining work. This has raised fears that land degradation could result in accelerated soil erosion and the sedimentation of Lesotho’s dam reservoirs. That is, that land degradation could tank the water-export economy.

In essence, the terrestrial demands of water production are coming into conflict with those of livestock production. Degraded rangelands not only threaten to diminish the quality of the water that enters Lesotho’s highland streams, which would otherwise be purified by filtering through soils rather than carried over land as runoff. They also lead to an increase in the energy of water flowing downslope, carving out gullies and carrying sediment and organic matter as it passes into reservoirs. This sediment diminishes reservoir capacity when it piles up and threatens machinery like the water intakes that connect reservoirs to South Africa.

A 2011 report by the World Bank found that LHWP reservoirs are silting up “at an alarming rate,” and that as a result “the LHWP might bury itself in a few decades.”¹⁵ LHWP engineers told the *Lesotho Times* newspaper in 2017 (and me in 2014 and again in 2019) that documented sedimentation at the ‘Muela Reservoir alone could prevent Lesotho in the near future from supplying water to South Africa. If or when that happens, Lesotho would stop receiving payments for water export. At the same time, the country would face financial penalties payable to South Africa, being contractually bound to supply water through 2044. All the while, it would need to continue servicing its debt to the World Bank for construction of the LHWP.¹⁶ The pain would extend across the border, too, given that millions of people living in South Africa’s economic core in and around Johannesburg depend on Lesotho’s water.¹⁷

I was told by an LHWP water engineer in 2019 that the small Matsoku Reservoir, formed by a weir and connected by tunnel to the Katse Reservoir, is even more impacted than ‘Muela.¹⁸ “It’s probably gone,” he said. Bringing dredging machinery to Matsoku might be too costly to be worthwhile.

What causes erosion, and how severe is it? How does one see erosion, and what can be done to stop it? How *does* water flow over land exactly? These questions echo through Lesotho’s mountain valleys in the water-export era, drawing attention further and further upstream.

Turning upstream has led me to believe we need a better sense of water as a terrestrial phenomenon, and not only a hydrologic one. Just as a commodity like petroleum, say, is pumped, inspected, and subjected to various forms of refining and redefinition before it can be sold, water is produced—not a thing but a project.¹⁹ Ways of understanding it are cultivated; social forms that can accommodate it are identified and leveraged. These activities point toward what I think of as a terrestrial politics of water: terrestrial, in reference to Lesotho’s *territory* but also to *terra*, the earth: the soil through which it flows and which it carries downslope into the watercourse.

Water commodities must be coaxed out of the mud.

That coaxing requires a “fluvial imagination,” a sense for how water flows over land and why. I’ll turn to an ethnographic example of this shortly, but first I need to thicken the historical narrative that I’ve so far developed. I want to show something about both the dynamism and the conservatism of this fluvial imagination—how it gets shifted strategically over time, but how certain elements endure. The text below embodies the tempo and recursivity of this history, with its sudden turns and returns. Crucially, I hope to show just how deeply enmeshed the fluvial imagination is with racial apartheid.²⁰

ENGINEERING STORAGE

It was the 1950s, and the British colonial administration struggled to make its Basutoland territory profitable. The colony now known as Lesotho had little economic potential, with its extremely mountainous terrain, limited arable land, and few natural resources. Peter Ballenden, the administration’s director of public works, hired an engineer named Ninham Shand to investigate the possibility that water could be stored in the country’s highlands and sold to neighboring South Africa for irrigation on farms in the Orange Free State and for industry in the Transvaal.²¹

Across the border in South Africa, the National Party was in its early years of majority rule since ascending to power in 1948. They had created a substantial political base of white “Afrikaners,” the Dutch- and Huguenot-descendant settler colonist group. They did so on a platform of racial segregation, the promotion of Afrikaner economic interests, and greater independence from the British

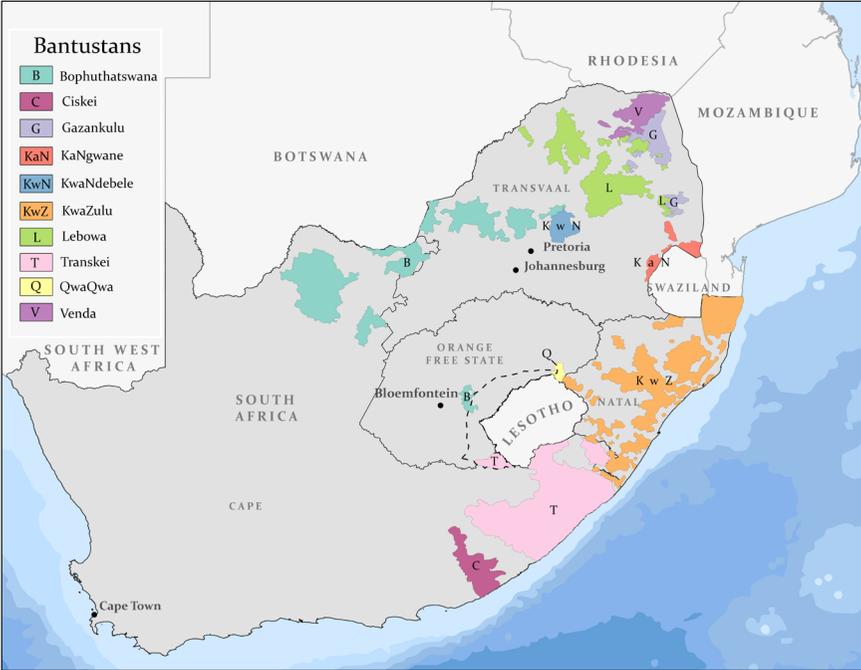
Commonwealth. As the government implemented its policies of apartheid under native affairs minister Hendrik Verwoerd—later prime minister Verwoerd—fears were surfacing about future water scarcity in South Africa's expanding economic heartland surrounding Johannesburg and Pretoria.²² With its meager sources of freshwater, the Johannesburg-Pretoria conurbation faced severe limits to its growth.²³ Nevertheless, gold and diamond mining there generated astronomical profits, drawing in secondary industries and an ever-larger human population.

During Shand's visit to the Oxbow area in northern Basutoland, now Butha-Butha District, he was struck by the hydrologic potential of the area. Surveying the elevation maps, he reportedly exclaimed, "If these levels are correct we can supply water not just to the Free State but to the entire Witwatersrand, by gravity!"²⁴ That is, water could be stored in the mountains and transferred to Johannesburg without the need for costly pumping, as would be the case for alternative supplies. Lesotho's water eventually passes into South Africa, but it is too low in elevation to reach Johannesburg by gravity alone.²⁵

The "Oxbow Scheme," as it was dubbed, was formally presented to the newly independent Lesotho government in 1967, but geopolitics intervened to delay it. The World Bank refused to finance the project due to international opposition to apartheid, which only intensified during the 1970s and early 1980s. Lesotho eventually became a "frontline state" in the fight against apartheid, and prime minister Chief Leabua Jonathan—though friendly to the apartheid government in the early years of his premiership—drew international aid into the country by exploiting this "frontline" position;²⁶ at least, that is, until 1986, when Jonathan was toppled in a military coup supported by South Africa.²⁷ Just ten months after the coup, at the request of Lesotho's military government, the World Bank approved financing. A treaty was signed. Lesotho was to become South Africa's water silo.

According to its initial design in 1986, the Lesotho Highlands Water Project entailed the construction of five storage dams positioned at various points along the Orange/Senqu River and its major tributaries. So far, two of these storage dams have been built in the mountains at Katse and Mohale, as well as a weir at Matsoku and a tailpond dam for hydroelectricity generation at Muela in the foothills. Tunnels connect the reservoirs, and a river carries the water to Johannesburg. These are all engineering marvels. Seeing the dam walls in person is stirring. At 185m and 145m, respectively, Katse Dam and Mohale Dam are among the tallest dam walls on the continent, with reservoirs that together hold over 2.9 billion m³ of water. A third dam, under construction at Polihali as I write, will add another 2.2 billion m³ of water storage, on demand for a thirsty South Africa.

As noted above, this was not the first time that Lesotho had been enrolled as storage infrastructure for South African industry. For more than a century, Basotho men and women had migrated to South Africa for work in the mines, as domestic workers, and as manual laborers.²⁸ Whereas the country was once an important exporter of grain to South Africa in the late nineteenth century—the so-called "granary of the Free State"—South African tariffs and British colonial



MAP 3. Map of the Union of South Africa circa 1975, showing the Bantustans. Note that not all Bantustans had been granted “independence” at that time. Dotted line shows the “conquered territories” of Lesotho. Cartography by Jon Caris and Tracy Tien, Spatial Analysis Lab at Smith College. Bantustan boundaries adapted by author from <https://commons.wikimedia.org/w/index.php?curid=25392438> by Htonl. Conquered territories boundary digitized by author based on map in Lelimo (1998). Ocean bathymetry made with Natural Earth. All other administrative boundaries and city locations from ESRI Living Atlas.

economy, whereby Africans, having had their best land expropriated, were compelled to work in industrial centers—but with their movements regulated through passbooks and work permits in accordance with labor demand.³¹ Under apartheid, South Africa sought to establish the Bantustans as quasi-independent countries so that they could legitimately remove Africans from white spaces through “deportation.” Each Bantustan would house a distinct ethnic group: one for the Batswana, one for the amaZulu, and so on. These groups would then be able to preserve their language and culture, so the story went. The international community refused to recognize the Bantustans, however, bowing to pressure from activists who saw them clearly as tools for racial discrimination and exploitation.

Like a Bantustan, Lesotho is ethnolinguistically homogenous and has very little arable land or industry. Yet, whereas the Bantustans were dissolved with South Africa’s transition to democracy in 1994, Lesotho is a “real country,”³² so it remained whole. There was talk of dissolving Lesotho into South Africa as a tenth

province at that time—after all, South Africa completely surrounds it—but the calculus was unsolvable: an entire monarchy, its associated chieftaincy, and a parliamentary political class would be reduced to minor, provincial players. Ordinary people in Lesotho would have to subject themselves to an alternative political system, and one that was emerging from the rubble of outright revolution. Besides, Lesotho had little to offer South Africa's economy (as South African leadership saw it) apart from labor and water, which South Africa already had access to as needed.

Making matters worse for Lesotho, the new South Africa favored domestic workers over foreign ones, and Basotho experienced a severe contraction of employment opportunities in South African mines. As if the crisis could not deepen further, the price of gold dropped, and mines underwent a period of mechanization. Less labor was needed, foreign or domestic. Whereas in 1979, there were some 129,000 Basotho workers on the mines according to official statistics,³³ this figure declined to 34,000 in 2011, and 19,000 in 2018.³⁴ Mining jobs that were once a rite of passage for Basotho men are today the luxury of a privileged few. Worse than a labor reserve, Lesotho had become a *discarded* labor reserve.

With Lesotho's water-export economy just getting off the ground, a decisive shift was afoot. Having been transformed in the early twentieth century "from granary to labour reserve," as Colin Murray famously described the decline of Lesotho's position as a prominent exporter of grain,³⁵ the country was transformed in the late twentieth century from labor reserve to *water reservoir*—a structural condition whose social, political, and ecological consequences are the subject of this book.

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But back to Ballenden and Shand for a brief moment: their idea in the 1950s to build dams in the mountain valleys of Basutoland did not come out of thin air. It was a legacy from another colonial moment of fluvial imagining. They proposed to provision water to the Transvaal, but several decades earlier the scheme was put forward instead as a means of preventing floods from damaging farms in the Orange Free State.

In the early twentieth century, the white Afrikaners who owned those farms complained that unregulated grazing in the Basutoland highlands was causing soil erosion and undermining the mountains' ability to store and slowly release water over the course of the year. They believed that rangeland degradation was causing water to flow too quickly through the watercourse, leading to floods and an excessive amount of silt. Basotho people were called upon to cease farming and even to leave the mountain areas altogether, despite the lack of reliable data at the time showing that their grazing methods did indeed contribute to erosion.³⁶ The British proposed the construction of a dam in the mountains to mollify those farmers and their political leaders in the Union of South Africa—not yet so closely united as today's Republic of South Africa—who had begun using this issue to pressure

the British to cede Basutoland to the Union. The dam would “capture any siltation and result in a clearer flow of water into the Union,” as the historian Thackwray Driver aptly put it.³⁷

Those pressures subsided as the years passed. By the time Ballenden and Shand arrived on the scene, complaints by South Africans about highlands erosion and flooding had abated somewhat.³⁸ South African engineers were turning their attention instead to urban water supply in Johannesburg and Pretoria, with projections of future water demand making action on the issue appear increasingly urgent.³⁹ Ballenden and Shand effectively reimagined those proposed flood-control dams as a water-transfer scheme in service of South African industry.

In sum, a flood-control project designed to *trap sediment* was converted into a water-export project *in spite of that sediment*. That conversion reverberates in attempts to understand and manage problems posed by soil in the present—in attempts to engineer the storage of water commodities. It is a reminder that storage infrastructures like these are not mere “technical” matters. They are sites of social activity: of imagination, of production, of reproduction.⁴⁰

Above all, engineering storage requires regular reckoning with contradiction, namely the contradiction between storage and extraction. During apartheid, South Africa sought to store up workers it could tap at any moment. Industry then wanted laborers but not rights-bearing citizens. It needed them close, but wanted them far away. Industry today wants Lesotho’s water, but without having to worry about the landscapes from which it issues. It demands minimal impact by livestock, but as I’ll show it provides almost no long-term employment, leaving livestock production as one of the few options for rural people living in upstream catchments.

South Africa’s labor reserves required “upstream” mechanisms to manage their contradictions.⁴¹ Some of these mechanisms were material in nature, while others were symbolic or social. Borders and passbooks, for example, helped regulate the flow of people, while ethnic or national identities helped to justify that regulation. The disciplining of kinship relations, too, for example by prohibiting spouses and children to accompany mineworkers, reinforced miners’ status as “temporary sojourners” in white areas.⁴²

South Africa’s water reserve requires similar upstream mechanisms. As during its labor-reserve era, the demands of storage and extraction in this reimagined apartheid infrastructure come into conflict. The contradictions generated by Lesotho’s structural position as water reservoir must be managed. Over my sixteen months of ethnographic and ecological field research between 2011 and 2019,⁴³ I found that such management is in large part an exercise in theorizing environmental process. More specifically, those making a living in the shadow of Lesotho’s water-export economy must creatively read and navigate the fluvial landscape. Not left to the expert class alone, this is a task for livestock owners, water engineers,

conservation bureaucrats, herders, and even livestock and vegetation. Each must conceive of how water flows through soils, plants, and other landscape features—and therefore how one should properly interact with this landscape.

In short, I show, the search for “water security” in South Africa’s urban core interpellates landscape theorists in the rural periphery.⁴⁴

Walk with me.

SQUARING AN ECOLOGY WITH A SOCIOLOGY

We stood in the full sun, leaning against the stone wall of a livestock corral in the high mountains. Tankisi flashed a smile, straightened up, and answered my question with one of his own.

“If someone sets out in front of you maizemeal, sautéed greens, and meat, then asks you to choose one, which would you choose?”

Correctly, I answered, “Meat.”

We all burst into laughter. Tankisi’s joke, which played on Basotho love for meat, was made in passing but packed with meaning. It was a map through dynamic rangeland spacetime, a theory of ecological process—one fit to explain Lesotho’s degraded rangelands, as he saw it. Standing beside his son, Kao, who often lives and works as a herder at this remote livestock post, Tankisi explained what he meant: livestock select the sweetest perennial grasses from a pasture, like *seboku* (*Themeda triandra*, the meat in his analogy), leaving behind shrubs and less palatable, less nutritious annual grasses. In doing so, they diminish the desirable species, while aiding the undesirable ones.

More than outlining an ecological theory, Tankisi was in fact voicing implicit support for a rangeland reform proposed by a foreign conservation organization called the Sponges Project that I’ll describe at a few different moments in this book. The reform suggested that livestock should be prevented from grazing whichever plants they prefer; instead their movements should be confined in such a way that they consume everything in the sward. Its goal was to protect Lesotho’s “water resources” by improving the condition of its highland pastures. In the catchments upstream from Lesotho’s reservoirs, rural people are very successful at raising livestock, but they are described by conservation bureaucrats at home and abroad as woefully ignorant of good environmental practice.⁴⁵ This ignorance, they contend, manifests in runaway soil erosion and reservoir sedimentation. Better rangeland management would promote the good flow of water into reservoirs and, by turns, Lesotho’s ability to produce water commodities.

But the reform was as much about understanding the past as it was about building some brighter future. It represented an attempt to interpret and author a history of the landscape. It was a form of landscape historiography. This landscape historiography aspired to bring a theory of ecological process into alignment

with a theory of social process for the sake of water export. It would account for how a specific set of plants assembles into a community under grazing pressure; how water flows differently through that community; how livestock preferences call for certain herding techniques; and, as I'll show later on, how ideal conditions for water's careful flow into dam reservoirs might be encouraged through livestock commodification and changes to political institutions.

In a joke, then, a landscape.

We occupied the exposed midslope of a spur that bisected Mokhoabo-Motšo ("The Black Mire"), a small valley named after the dark, organic soils of Lesotho's alpine wetlands. These wetlands, or "mires," are known to hold massive amounts of water that they slowly release downstream, turning ephemeral streams perennial. Discharged from Mokhoabo-Motšo, this water flows to the Seate, Mapholaneng, Khubelu, and Senqu Rivers, each tributary tumbling down toward the trunk. The Senqu River then heads south and west out of Lesotho (where it is called the Orange River), twenty-three hundred kilometers to the Atlantic Ocean along the border between South Africa and Namibia.

From our perch in these Senqu headwaters, we looked out across the steep valley slopes surrounding us—slopes mottled with blotchy eruptions of distinct shrub communities that I had come to know well from the help of hard copy field guides and the assistance of people like Tankisi. On the south-facing slopes, a sea of pea-green *malitšoekere* (*Helichrysum trilineatum*) in full yellow bloom was interspersed with shocks of bluish-gray *thotho-li-roalana* (*Inulanthera thodei*), and on the north-facing slopes a mix of the dark-green *sehala-hala* (*Chrysocoma ciliata*) and *selingoana* (*Pentzia cooperi*) dominated. Like a drop of water on dry paper, they crawled up from the valley bottom before thinning out and giving way to grasses and, eventually, the rocky, mineral soils on the ridgeline that crumble into the valley.

Interrupting this floristic pattern were occasional "cattle posts" (see fig. 1), where herders stay with their herd of typically sheep, goats, and a few cattle:⁴⁶ a low, round, stone structure with a haphazard thatched roof and a stone *kraal*, the commonly used Afrikaans word for a livestock corral. Cattle posts can be seen from a distance as a brown expanse of bare earth, surrounded by bright-green, creeping grasses that thrive in the nutrient-loaded soils created by animal urine and feces. A diffuse network of trails was cut between the cattle posts, pastures, and water points, passing onward to locations beyond the valley. Histories were encoded in rangeland palette and form—patterns of deep significance to the water-export economy, interpreted by Tankisi. And by conservation bureaucrats. And by me.

Mokhoabo-Motšo was supposed to be empty of livestock at this time of the year, when these winter grazing areas become deserted by chiefly decree for the even-higher summer rangelands. The call to move had been issued two weeks earlier. But further down the narrow valley below us some sheep grazed and rested



FIGURE 1. A highlands cattle post. Photo by author.

between the shrubs. Somewhere in our sight, a herder sat watch. A mass of afternoon clouds peeked out from behind a distant ridge, too far away to signal rain.

It was both surprising and sensible that Tankisi would envision rangeland ecological process in the way he described. Surprising, because I knew he believed that changes in the rains were having more profound effects on the range than management decisions about when and where to graze livestock. And he knew better than I did that the conservation bureaucrats' plans were impossible. To limit which grasses are eaten by livestock, generations of grazing practice and the political order that structures it would need to be overturned. Areas would need to be fenced to delimit the space in which livestock could graze—an expensive proposition, and in any case one deeply offensive to the rangeland commons. Absent fences, herders would need to practice what the bureaucrats described as “active herding,” continually encircling the animals to keep them from straying.

Herders, who are paid next to nothing to live for months exposed on the high plateau of the Drakensberg Mountains, would simply not agree to this labor-intensive method. At *motebong*, the Sesotho name for these remote areas where most of Lesotho's livestock are kept, herders do not obey the rules of others. Neither do their livestock. A Sesotho aphorism states, “At *motebong*, there is no herding” (*Motebong ha ho lisoe*). Owing to some grammatical ambiguity, it could also be translated, “At *motebong*, one is not herded.”

Yet, his position was not only surprising but *sensible*, because Tankisi is well-known as a “liaison,” I might say, a person who lives in a rural village and is often called upon when development and conservation initiatives pass through the area—which they do with some regularity. At his house one day he proudly showed me a brochure from an earlier wetlands-protection project, which featured him by photo and by name as a farmer who was committed to teaching his village about the importance of wetlands after having attended one of their workshops. Tankisi speaks no English, and is enthusiastic and unambiguously “rural” in the ways these projects appreciate that subject position (though he worked in South African mines for a decade, spoke Fanakalo and Sepedi, and had church and family connections that brought him periodically to the South African city of Polokwane).

Most importantly, he has a clear understanding of how such initiatives work. This, even if he may disagree with project efforts in practice. Indeed, he often does. For example, Tankisi is a leading member of the local grazing association, a “community-based” group formed by that earlier wetlands conservation project but resuscitated by this more recent scheme—and yet, as I describe later on, he was known by my observation and those of others to transgress grazing association rules. He epitomized the complex exegetical work in which people in Lesotho read the landscape with an awareness of the social and material costs of one landscape interpretation or another.

In a joke, then, a landscape. Specifically, an *upstream* landscape: one characterized by the upsetting speed of its fluvial water, and its position as part of Lesotho’s enclave geography—but which could be improved. The landscape Tankisi (and this wetlands protection scheme) presented was one that answered a pressing question: How to reconcile the terrestrial demands of Lesotho’s water-export economy and those of its rural population? If only it were that easy.

That question instigates a debate about how livestock impact water’s flow. The chapters below follow that debate—the delicate effort to square an ecology with a sociology—throughout Lesotho and its upland catchments. Attempts to resolve the debate have different implications for people, depending on their social position, illustrating the high stakes of interpreting landscape patterns in Lesotho’s water-export era. I show how the water economy’s orientation toward water’s flow, capture, and extraction is suffused with literal and metaphorical sediment. It is mired in the alluvium of scheduled water transfers and reservoir management strategies, in the fears and fantasies about people and their environment, and in the “imperial debris” of a century of bureaucratic reforms scattered across the landscape.⁴⁷ This sediment is carried from slope to stream, tumbling through the watercourse as suspended load and bedload, before settling on the reservoir floor, both problem and logical outcome—the by-product of a system of storage. Lesotho has been rendered what I call a “fluvial economy.”

THE FLUVIAL ECONOMY

The specter of fluvial water upstream looms over the volumetric water sold to South Africa. The geomorphological term *fluvial* refers to water flowing over land and its effects, or the disturbance of a site through hydraulic action. Fluvial processes leave traces.⁴⁸ I call attention to them because the very nature of water as it passes through the landscape is at stake in the manufacture of national water commodities, in this attempt to reorganize Lesotho's political economy in the aftermath of labor export.

What water *means*—what water *is*—how water *moves*—is being newly negotiated in these ecological and political contact zones between water production and livestock production. Variouslly positioned within those contact zones, the ethnographic characters I present include civil servants from Lesotho's conservation bureaucracies, livestock owners, herders, water engineers at the LHWP, and others.⁴⁹ Water's relationship to the nation, to livestock grazing, to rangeland management, and to interactions within the multispecies community was sometimes debated, sometimes agreed upon among these groups during my research as they interpreted the fluvial landscape.⁵⁰ Their interpretations converged upon a variety of scenes I present below: in village workshops to promote grazing associations; in herders' use of medicines to encourage their animals to consume unpalatable forage; in encounters between herders and conservation bureaucrats on the roadside; in meetings between bureaucrats and chiefs; and in observations of eroded hillslopes.

I use the term *fluvial* literally and figuratively when I join it with *economy* to describe how the contradicting imperatives of storage and extraction instigate problems—in this case problems of sedimentation and problems of interpretation.⁵¹ Though it is the first “water-exporting country” in the world,⁵² a political category that draws attention to the flow of water commodities, in fact the LHWP is fundamentally about storage, or the arresting of flow: holding water behind national borders, behind dam walls, and even in the wetlands of the upstream catchment. In the same way that a labor reserve might be described as “supplying labor” when in fact the arrangement does more to prevent immigration, the LHWP is predicated on its ability to hold back water as a precondition for regulated flow. The necessity of storage in the course of extracting water commodities means the project is always threatened by sedimentation, an accumulation of stresses and pressures.

The concept of fluvial economy, then, speaks to a broader process at work in the world today: the accumulating stresses that follow economic inequality and rapidly changing Anthropocene environments. It is a concept for seeing the by-products of systems of extraction or production. After all, “by-products” are actually “products” by another name, as Raymond Williams described.⁵³ A factory that generates toxic waste in the process of making toys for children, say, is equally

a manufacturer of toxic waste as it is a manufacturer of toys. Similarly, the by-product of water production is reservoir sedimentation.

Recall how theorists of globalization were rightly taken to task for obsessing over the “flows” (e.g., of capital, images, people) that were said to characterize a newly interconnected world without examining what Anna Tsing described as the “channel-making activity of circulation . . . the missed encounters, clashes, misfires, and confusions that are as much part of global linkages as simple ‘flow.’”⁵⁴ Building from this work, the notion of a fluvial economy draws attention to a relationship between the flow of resources from one place or people to another, the material effects of those flows, and the interpretive work of discerning how these flows occur and what they mean.

The clash between water production and livestock production—and the concerns about soil erosion that it animates—ultimately represents a form of “green imperialism,” Richard Grove’s term,⁵⁵ describing the habit of imperial powers to intervene in imperial peripheries with remedies for environmental problems they themselves have caused.⁵⁶ The water economy is the cause of sedimentation concerns, and yet its scientists and engineers ask rural people to shoulder the burden. Allow me to explain. First, the LHWP raises the stakes on soil erosion: once a minor problem for rural livelihoods alone,⁵⁷ now soil erosion threatens South Africa’s water supply and therefore Southern Africa’s entire regional economy. Second, the LHWP didn’t do enough to account for soil erosion in its design and planning, despite many warnings (see chapter 2). Third, the inundation of river valleys increases land pressure in the catchments above the reservoirs by removing land from use, forcing farmers to plough and graze animals on marginal land. Finally, the water-export economy has left livestock as one of the few ways of making a living in rural Lesotho: the livelihood practices needed to survive the water-export era are precisely those that undermine water export.

Any system of storage and extraction will inevitably be caught by problems of sedimentation. Like water basins, however, which see different rates of sediment movement based on their inherent soil and topographic properties, climate regime, disturbance regime, and land cover, some fluvial economies are more impacted than others. This is why the history and materiality of Lesotho’s water is so important. It’s why in the pages below I will regularly historicize the social and ecological forms at play. And it’s why I’ll insist on a close scrutiny of biophysical data as much as “social texts.” It matters that this water commodification effort is happening amid a global climate crisis, and it matters that it’s happening specifically in Lesotho. Whether it’s water or livestock, labor or land, commodification works through the reduction of diverse things to abstract exchange values, but that transformation is always a local negotiation.⁵⁸ These negotiations churn in the disorientations of landscape historiography of upstream Lesotho, to which I now turn.

PATTERNS IN THE LANDSCAPE

Like water flowing over land, discourse on landscape change passes through existing channels, widening them and only occasionally cutting new pathways. If landscapes are libraries, as Kate Showers has put it,⁵⁹ Lesotho's shelves are full, and this book reflects critically on this tradition of landscape historiography even as it registers a new entry. Erosion mitigation in Lesotho is long and fraught,⁶⁰ calling into question whether current and future efforts can succeed—except perhaps as mechanisms for rural governance.⁶¹ Soil erosion is difficult to see, measure, and monitor, yet despite the country's reputation as profoundly erosive,⁶² sedimentation monitoring has been a minor priority since the LHWP began.⁶³ This has left only guesswork, punctuated by alarm, to fill the epistemic gaps.

Consider one small example—one attempt to make sense of an observation of the landscape.

I drove through the mountains of Mokhotlong one day with conservation bureaucrats, on our way back from a visit to some degraded wetlands. We'd been discussing the ongoing drought when we passed over the Tsilantšo bridge, where a dramatic flood had laid waste to the riverbed just a few months earlier. Sediment sat in sandy piles, small boulders were strewn across it, and the typical riparian vegetation had been scoured out. The small river was perfectly dry, in spite of the fact that it was well into the rainy summer season. As many people told me, Lesotho recently had seen changes in the rains toward irregularity: long, dry spells broken by torrents. One of the bureaucrats, Tuke, looked out the window at it and sucked his teeth: "Hey, the river is so dry," he said, in what we in the car understood to be a reference to the drought.

His colleague Sepheo replied, gesturing up the mountainside, "Or, perhaps the soil above can't hold the water and it just courses downstream and away." Sepheo was critical of chiefs' inability to exclude livestock from pastures for periods of rest and forage regrowth, envisioning the effects of this failure in the loss of soil function. The dry, eroded streambed was an expression of the problem.

"Yep," Tuke replied in agreement. We looked out the window briefly in silence. Sepheo had effectively reframed this fluvial landscape from one shaped by the condition of rains to one shaped by the condition of land management.

Anxiety about fluvial process draws my interlocutors' attention upstream like this to the pastures, agricultural plots, and especially the alpine wetlands of Lesotho's rural highlands.⁶⁴ Holding extraordinary amounts of water on the high plateau, these wetlands help regulate streamflow, preventing floods and extending the seasonal life of ephemeral streams through the dry winter months.⁶⁵ The wetlands are deposits of deep, black organic soils that contrast with the thin, mineral soils of the steep slopes around them. From afar, their outlines are particularly clear: their edges transition abruptly from the small forbs and creeping grasses that cover them to the vegetation types more typical of the hillslopes elsewhere: tussock



FIGURE 2. Herder in alpine wetland. Photo by author.

grasses and dwarf shrubs. Herders use them as water points for their animals, particularly in the drier months (see fig. 2). Wetlands are now understood by water engineers as crucial components in the LHWP storage infrastructure, used to promote an even, predictable flow of water into reservoirs across the year.

Their perceived importance is attested by the proliferation of metaphors to explain them. Conservation bureaucrats and LHWP boosters sometimes refer to them as “silos of white gold” (*lisiu tsa khauta e tšoeu*) or “sponges.”⁶⁶ An entire conservation project was established to mobilize this particular metaphor in the Mokhotlong District, the Khubelu Sponges Project.⁶⁷ In early 2014, I sat down with Sepheo, who was a well-respected official employed by that conservation scheme. I hoped to learn about his work. He started by explaining wetlands’ function—casting about his office for a sponge. Unable to find it, he pantomimed for me a lesson on wetlands’ water-storage capacity.

“If you take two cups with some water in them,” he said, holding two invisible cups on the desk in front of him, “and place a sponge in one—and then turn them both upside-down—what will happen?” I started to answer, but he finished for me: “The water spills out of the one without the sponge, but it slowly pours out of the other.”

The sponge metaphor nicely articulates processes of landscape change in response to livestock movements. A ministry official explained to me on a separate

occasion that the wetlands are being degraded when livestock trample them. “They are like sponges,” he said, also pantomiming. “When you pour water on a sponge, it absorbs it. But when you squeeze it,” he clenched his fist, “like when livestock trample wetlands, the water runs out of it.”

Because they serve as water points for livestock in these high-altitude regions, wetland degradation linked to livestock trampling has become an object of concern for the LHWP, the Lesotho government, and a host of nongovernmental organizations interested in conservation.⁶⁸ If erosion gullies form, rainfall is immediately lost as surface runoff; no longer trapping as much organic matter either, they are less able to maintain water purity. One study concluded that Lesotho’s wetlands stored 36 percent less water than is their potential due to historic degradation.⁶⁹ Though geomorphologists have found that factors other than livestock contribute to wetland degradation, such as burrowing rodents,⁷⁰ livestock impacts are clear to anyone who visits them.

The wetlands protection project was initially run by a global consulting firm based in Germany, justified by the importance of Lesotho’s “water resources,”⁷¹ before being taken up by the government of Lesotho. The firm won a contract to carry out this project, valued at more than 1 million euros and funded by the German international development fund, the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). The early work of the Sponges Project, Sepheo said, was to establish connections with people in government and elsewhere, while also hiring experts on wetlands and rangeland management for a temporary consultancy in order to advise them in their work. When I spoke with him in 2014, they were trying to map out how different “stakeholders” relate to each other in rangeland use, such as how herders relate to farmers, and how farmers relate to chiefs or to institutions called “grazing associations.” In effect, they sought to square what they knew about institutional forms and processes with what they knew about ecological ones.

An underlying assumption of theirs was that pedagogy surrounding water and wetlands was of the utmost importance, hence the metaphors of silos and sponges.⁷² Five years later, at a meeting of the wetlands project in 2019, there was still widespread concern among them about the issue of public education. The agenda featured topics submitted by the various agencies and ministries present. One topic stated that “people still don’t understand the value of wetlands.”

In the discussion of this topic, the conservation bureaucrat named Tuke said that he believed this issue was slightly more complicated than what had been written. “People have an interest in their animals,” he explained, “whereas we have an interest in wetlands. These are two different positions,” he said, effectively arguing as I am that the terrestrial demands of everyday people conflict with the terrestrial demands of national water production. The local government councilor, Lebohang, agreed, but countered by reminding everyone of the high stakes of water production in and beyond the nation: Namibia, Botswana, and South Africa

also depend on this water. Controlling the movements of livestock and controlling the flow of Lesotho's water, we learned, were conjoined geopolitical propositions.⁷³

What constitutes proper land use in Lesotho hinges on ideas about how grazing affects water's interaction with soils, grasses, and other landscape features—not to mention ideas about the chieftaincy, the duties of a citizen, and even Lesotho's geopolitics. Though there may be agreement between livestock owners and conservation workers that rangeland condition used to be better, in my research I found disagreement as to how to define "land degradation," how to attribute a cause for it, and how to remedy it.⁷⁴ This disparity creates problems for range management: a contested economy of signs for reading the landscape. When built into conservation plans, the gaps and assumptions within such interpretations become physical manifestations, demonstrating how bureaucracy ramifies in ecological processes.

At a broader level, this situation shows how the everyday life of herders and the forage preferences of sheep in out-of-the-way places become urgent matters of interest for water engineers in office buildings in the capital. The more closely one scrutinizes water, the more uncertain it becomes. Like a siren's call, water production leads us to shipwreck, luring us upstream into soils, plants, social forms, and landscapes, a seduction this book reenacts.

ETHNOGRAPHY OF THE LANDSCAPE

At the center of water politics in Lesotho are landscapes—their description, structure, historiography, and morphogenesis. Since the colonial period, the highlands landscapes have incited anxiety in outside observers fearful of their unruliness and inscrutability.⁷⁵ How does one reckon empirically with anxious and inscrutable landscapes? I argue that it is with an ethnography of the landscape, a methodology that draws together the immersive, interpretive data of anthropology and various kinds of biophysical data familiar to ecology.⁷⁶

In the following chapters, I try to hold two things in tension: the disorientation of competing landscape historiography on one hand, and the material presence of landscape patterns on the other. My aim is to represent the disorientation richly and accurately, while also providing a positive (or, realist) account about landscape change based on "what we know"—two different approaches to working through the disorientation. I'm invested in this approach, not only because I think it's useful to this specific case, but also because it speaks to a simmering problem for studies of the environment in the Anthropocene. This is a moment in which our planet's ecosystems are buckling. It's also moment in which natural scientists are coming to greater awareness that culture and power might be relevant to understanding environmental change, and in which humanists increasingly engage with natural science subjects and concepts.⁷⁷ There is excitement but also unease.

The historical cleavage between interpretive approaches in the humanities and positivist approaches in the natural sciences has left humanists mostly

unauthorized to describe landscapes except as sites of meaning-making. Recoiling from the stultifying and sometimes racist forays of sociobiology and cultural ecology, “the environment” became merely a staging ground for human political contests among humanists.⁷⁸ Some of the most provocative exceptions to this rule come from scholars working in African contexts who have drawn together ecological science and critique to tell rich landscape stories.⁷⁹ *The Fluvial Imagination* builds on this tradition, while taking inspiration from emergent conversations about natural history in environmental anthropology,⁸⁰ to advance this work as a robustly ethnographic project.

Ecological formations, like social formations, are historically specific—in material terms and symbolic terms. Anthropologists and other humanists need a means of accounting for ecological formations, but without sacrificing interpretive sensibilities along the way.⁸¹ If ecologists seek to establish the laws that determine ecological processes, anthropologists might work to discern the signs, practices, and histories that make those laws matter at a given location and a given moment in time.⁸² This means drawing in practices of noticing from ecology, while affirming the value of qualitative observations of the landscape made by researchers and their subjects.⁸³ Perhaps counterintuitively, it means not overstating the case in assessing the human influence upon Anthropocene landscapes, even as humans have been so catastrophically destructive to our planet.⁸⁴ Lots of action in an ecosystem—say, in the assembly of a plant community in the highlands of Lesotho—has little to do with humans.⁸⁵

It means understanding the limits of critique, with a sense of the political costs of dismembering and cannibalizing science, a suite of knowledge practices that we desperately need (certain parts of it, anyway).⁸⁶ Equally, it means practicing a science that is self-aware about the cultural production of scientific nature—with all its anxieties, aspirations, prognostications, translations, and political commitments.⁸⁷

It means leveraging the insight from science and technology studies that all science is “ethnoscience” into an empirical project that is at once reflexive and authoritative, critical and positive. The missing *ethno-* on unmarked science is a testament to the importance of the humanities in conversations about the environment. That all science is ethnoscience doesn’t mean that science is irredeemably compromised. On the contrary, it means that it’s more dynamic and interesting than is commonly thought. In looking upon a landscape, we need both the *science* and the missing *ethno-* to understand what we’re looking at.⁸⁸

As part of my field research, I walked the landscape with herders and livestock owners through villages and cattle post areas, learning how they appreciate the effects of rains, livestock, and the political order on their rangelands. I sat in offices and meetings of government ministries, the LHWP, and other important conservation organizations, trying to understand the pressures that direct their energies, their primary concerns, and their goals. I drove with conservation bureaucrats

on their field visits and walked the landscape with them, hoping to see how they envisioned rangeland problems and possibilities. And, critically, I worked at the interface between rural people and conservation bureaucrats, tracking how both groups represented themselves to and conversed with other audiences—seeing how different visions of ecological process play out in real time. In addition to these human-focused ethnographic methods, I drew upon multispecies ethnographic approaches, including natural history observations and ecology. I used archival and remote sensing research to track changes in rangeland condition, as well as methods from ecological science to consider the relative importance of different variables for determining floristic composition and structure, including some invisible to the human eye such as soil moisture and nutrient loads.

This book is “interdisciplinary,” then—a term, however, that collapses many different kinds of practice into one, and these differences matter. Humanists’ use of ecological science, for example, can entail things like reading ecological science literature seriously and deeply to present the latest consensus on a debate; using ecology concepts to do social theory; using quantitative ecological science methods and analysis; or even simply working on the basic assumption that the biophysical world is relevant to stories about humans. This book enlists all of these interdisciplinary techniques. Readers will feel the shifts across them, as I have tried to hold on to their distinct tenors and vocabularies rather than smoothing out differences for a fantasy transdisciplinary harmony.

The research for this book began as a strictly anthropological project, but as it developed, I needed to understand the nature and timing of environmental change in Lesotho’s rangelands, hoping to parse debates I encountered in the field. These questions hadn’t yet been resolved in the scientific literature, so I decided to sort through them myself. I enrolled in rangeland ecology and soil science courses, but became so possessed by the questions that I pursued a PhD in biological science.⁸⁹ I came to realize after many years of laboring to understand this landscape history of water—to understand the morphogenesis of the landscape and its relationship to water and water production—that my interlocutors and I were preoccupied with similar questions, though posed from different positions. Our collective efforts represented a phenomenon demanding scrutiny in its own right: that anxiety about fluvial processes was emblematic of Lesotho’s water-export era, even if its affects, textures, and discourses were inherited from earlier periods.⁹⁰

Like me, my interlocutors sought to understand how livestock grazing, political institutions, and climate configured the passage of water through the landscape.

Like them, I had been interpellated by the water-export economy as a theorist of water’s flow.

Ultimately, as I will show, Lesotho’s landscapes are inherently prone to erosion. The architects of the water-export economy strategically overlooked this point, and the decision to site these dams in Lesotho in the first instance is the source of the water economy’s soil problems. Yet, soil erosion is also exacerbated by several

other factors: the intensive production of livestock in rangelands historically unaccustomed to it, including fires set for their benefit; a recent climatic shift toward more intense rainfall events; erosion control programs that have encouraged rather than prevented erosion; and colonial efforts to promote wool production. If there were a way to improve rangelands through novel management techniques—a possibility I find doubtful—it is thwarted by a long history of interventions into rangeland institutions that has rendered grazing almost ungovernable. Because of the weight of these structural factors, the space for action is limited. This book affirms Piers Blaikie's insight that oftentimes the true cause of environmental degradation is not found locally but rather off-site.⁹¹ It's true: intensive livestock production can encourage erosion. But such a statement is of little value without describing the context. Left with only livestock production in the aftermath of labor migration, rural people might push at the limits of Lesotho's landscapes—but it is because those who profit from water export have pushed so hard at the limits of Lesotho's ecosystems and social systems. At once drawn into South Africa's political economic orbit and excluded from it, people in rural Lesotho shoulder South Africa's environmental load.

. . .

For those who might like to read select chapters, here is the book's argument and architecture in one place. Each chapter builds upon the one that came before it, but I've tried to write them so that they might stand alone (which has required some repetition).

Efforts to produce water commodities incite landscape theorizing that can align environmental process with social process. Through an accounting of water's flow across the landscape, differently situated people seek to resolve or bypass the contradictions of Lesotho's water-export era: for example, that water production requires minimal landscape disturbance, even as it leaves rural people with only livestock production for their livelihoods; or, that the flow of water commodities requires storage, generating the problem of sedimentation.

The book's structure mimics the problem of water production as experienced by the LHWP. As one looks more closely at water, its nature becomes less certain, drawing additional factors and actors into view—from soils to livestock to social structures for grazing management to vegetation. The chapters are subtextually autoethnographic, reenacting my own attempts to find my bearings amid this spasm of landscape theory in the water-export era. Each moves step-by-step up the catchment, from water production in the lowlands, to soil conservation efforts in the subalpine rangelands, and to herder lifeworlds in the alpine wetlands. They are also inflected with an historical sensibility that is common to scholarship in African studies, but always in service of elucidating my ethnographic data. The look and feel of that historical approach shifts across chapters—some sequential, some patchy, some cyclical—as the ethnographic material calls for it.⁹²

The first two chapters describe the construction of a fluvial imaginary in Lesotho and the circumstances through which water commodification became thinkable and sedimentation inevitable. They show how the upstream production of water commodities rests upon a fluvial pedagogy that promotes coherent understandings of water's symbolic and material realities. First, national elites cultivate the notion that Lesotho's water is abundant, even across the nation, and a deep essence of the territory, as outlined in chapter 1. This runs counter to prevailing notions of actually existing water in Lesotho, a water which is seen as scarce, unpredictable, and destructive. While literature on water commodification describes water as a holistic, local, and cultural substance before being alienated as a commodity, in Lesotho I saw instead how that wholeness, localness, and culturalness was being fashioned as a precondition for alienation.

Water engineers are aware of the destructive quality of Lesotho's water, and it figures for them as a "problem of operations" in reservoir management, as I show in chapter 2. That chapter documents how the elevation of water production as a national priority instigates discussion about who is responsible for land degradation and how to address it, depicting Lesotho's landscapes as spaces through which water flows too quickly. In the belated response to reservoir sedimentation, conservation bureaucrats must acknowledge the destructiveness of Lesotho's water when they attempt to engender popular concern for reservoirs as objects of national interest. I start by outlining Lesotho's history of soil erosion and assessing the current threat it poses to the LHWP. Then I turn to consider how conservation bureaucrats teach publics to read vegetation patterns as a way of understanding erosion, especially patterns of dwarf shrubs.

Solutions to the inevitable sedimentation of water storage infrastructures focus squarely on livestock in the upstream catchment. These include the countrywide institution of conservation measures aimed at slowing down the flow of water across the landscape, including the one endorsed by Tankisi. I turn to these measures in the next two chapters. Armed with ecological theory from colonial times that draws land-use management to the center of attention, rather than changes in the rains as emphasized by everyday people, contemporary conservation bureaucrats employ techniques that fit with their own imaginaries of proper social order. Soil conservation efforts consist of two different approaches, described respectively in chapters 3 and 4: physical structures, such as gabions and silt traps, and social structures, such as grazing associations.

Chapter 3 shows how the practice of soil conservation defers the political economic contradictions of life in the water-reservoir era. The physical works promoted by conservation bureaucrats are unsuited to prevent soil erosion, and yet strangely they are critical to the LHWP. This is because they shore up a precarious social contract in the aftermath of labor migration through a politics of distribution—giving people money so they don't starve. This conservation work is

termed *fato-fato*, and it reflects a long history of government distribution, as well as political debate about its merits.

The grazing associations that I describe in chapter 4 represent a more explicit kind of social engineering. Grazing associations, whereby ordinary villagers are tasked with managing rangelands on behalf of chiefs, are seen by conservation workers to get at the root of the problem: rangeland management failures. But these associations are haunted by many decades of previous land use reforms that hobble these new efforts. What emerges is an entangled bank of grazing rules and authorities, impossibly complex. Such efforts have little impact on rangeland condition, as there is probably no management fix in an economic periphery like Lesotho, where both grazing pressure and interannual variation in rainfall are high. However, they do secure donor aid for elites who implement them, shape the political terrain within which herders work, and stymie future reforms.

The final two chapters show how herders and livestock owners have attempted to circumvent the structural pressures around them, whether imposed by colonists, national elites, or the climate. This is visible in the ways they commodify livestock. As I explain in chapter 5, everyday Basotho people have produced sheep and goats for wool and mohair since the earliest days of the Basotho nation when they freed themselves from chiefs' control of lowland pastures. In assessing the social and environmental roles played by livestock, much of the focus from conservationists and anthropologists has been on cattle and their resistance to commodification. However, small stock have been readily commodified by Basotho, thanks partly to the forms of freedom that they inspire in young Basotho men. Since the decline of the labor migration economy, livestock owners are turning wool and mohair production, which had long been a retirement activity, into a full-blown occupation. Pushing one step further, too, they are integrating mutton breeds into their flocks to tap a new market at butchereries over the border.

Chapter 6 describes the landscape effects of these livestock practices, illustrating how Lesotho's rangelands are products of South African industry and its apartheid legacy. Herders and livestock owners engineer rangeland spacetime in response to encroaching shrubs, drought, and insufficient forage. Not waiting for conservation bureaucrats to improve their fortunes, herders burn the range, encouraging erosion but drawing young grasses out of the soil; they introduce molasses and salt to encourage their stock to eat unpalatable forage; they improve their sheep and goat breeds; and they find ways to import or produce fodder in agricultural plots. Like *fato-fato* and sheep commodification, these medicines and pasture management strategies subtend water production, which would otherwise buckle under the weight of the country's social contract.

Drawing together archival materials, natural history evidence, ethnographic data, and ecological surveys, I present an alternative landscape history to the one

provided by conservation workers. I describe how settler colonialism by white Afrikaners, class struggle within Basotho society, and the colonial promotion of wool and mohair production put intense pressure on the mountain rangelands where LHWP dams are now sited. Overstocking was encouraged during the emergence of the wool market despite colonial and conservation statements to the contrary, and it has only been exacerbated by Lesotho's ongoing marginalization. With continuing pressures to expand commercial circuits, it is difficult to see how a transition to improved range condition could be attempted without changes to the regional political economy. Lesotho's rangelands express the country's experience as a storage reservoir.