

Negative Ecology

Let us follow the gaze of water engineers and conservation bureaucrats further into the upstream catchment. In the course of producing water for export, it is not enough to merely trap water behind dam walls and redirect it through a network of tunnels and canals. Engineers must contend with the landscapes from which this water issues. The foregoing chapters have shown how, in response to piles of sediment accumulating in dam reservoirs that threaten the water economy, engineers and conservation bureaucrats moved to build physical conservation works that might slow the passage of water downslope. Hoping to get “to the source” of the problem, they moved further upstream, reworking social forms. They reintroduced grazing associations to change how livestock are managed, and they encouraged rural Basotho to commodify their livestock as a way of bringing herd size into line with the market’s “invisible hand.” They narrowed in on the practices of herders and the preferences of livestock in the cattle post areas of the high mountains. They sought to establish a fluvial imaginary that might help rural people interpret patterns in the landscape in relation to water’s flow. They envisioned land degradation—and therefore soil erosion—as being encoded in the presence of dwarf shrubs, but that code was being deciphered in a variety of other ways. Shrubs were seen by some as an effect of climate changes rather than grazing; by others, as a *cause* of poor water flow rather than mere symbols of it; still others saw them as soil-stabilizing agents that *prevent* erosion.

Reading and interpreting the landscape is crucial in the water-export era, clearly. Recall one specific example of landscape exegesis from chapter 4. The Sponges Project, the conservation initiative seeking to protect Lesotho’s alpine wetlands for water production, bucked a long-standing trend by suggesting that pastures might not be overgrazed but rather *undergrazed*. To prevent undergrazing, however, herders would need to herd “actively,” encircling livestock to encourage them to eat all of the vegetation—not simply the ones they preferred. According to this

fluvial imaginary, the selective grazing of livestock that were too dispersed in the pasture expressed itself in the encroachment of shrubs, the decline of rangeland condition, pressure on the alpine wetlands, and ultimately the aggressive flow of water over land that caused soil erosion. But promoting active herding was a challenge, we learned, because they felt herders were too lazy. After all, at the cattle post, one does not herd (*Motebong ha ho lisoe*).

I present an alternative interpretation of landscape patterns in the pages below, one informed by herder perspectives, by an ecological sensibility for the ways a plant community responds to grazing, as well as by a historical sensibility for the structural forces that configure herder interactions with the landscape. I show that the degradation that concerns conservation bureaucrats largely owes to the presence of sheep—the impact of their grazing, the timing of their arrival in the highlands, and the pasture fires that are set for their benefit. Yet, diagnosing this problem as “overgrazing” or “mismanagement” occludes some of the most important factors. These include the labor- and water-export economies, with the opportunities and limitations they have presented to rural people; the changes in the rains in recent decades; and the construction of roads and bridle paths (initially for wool production) that facilitated channelized water flow and the proliferation of encroaching and invasive plants. To the extent that degradation stems from human practices, it should be seen as a function of marginalization at multiple scales: of Lesotho within South Africa, of the highlands within Lesotho, but also and especially of herders within Lesotho society.

Herders are positioned at the center of Basotho cultural imaginaries, yet at the periphery of its social and economic systems. Livestock owners have managed to increase production over the past century in spite of declining rangeland condition by improving their sheep and goat breeds and by importing or planting fodder, as referenced in the previous chapter. But they have also benefited from the labor and expertise of herders who engineer forage in landscapes colonized by shrubs and plagued by drought. Not waiting for conservation projects to improve their fortunes, herders have taken matters into their own hands: they burn the range, drawing young, nitrogen-rich grasses out of the soil; and they introduce molasses and salt to compel their stock to eat unpalatable plants. Burning risks serious soil erosion, but one is not herded at the cattle post. The sense of freedom herders experience there makes the difficult work of herding worthwhile, but it also means that efforts to change their behavior will falter. The molasses, called *nyopo-nyopo*, in fact addresses the problem identified as herder laziness in the push for “active herding,” as we will see. Like *fato-fato* and sheep commodification, these medicinal and pasture management practices sustain water export by deferring the unraveling of Lesotho’s precarious social contract. Life in the highlands is on shakier ground than ever, even as these mountains serve as a staging ground for the production of lucrative water commodities.

Marginality isn't just a characteristic of these systems; it is an organizing principle of them—the marginality of Lesotho in a system of water production, and the marginality of herders in a system of livestock production.¹ Generating water commodities for South Africa depends on and depletes Lesotho's ecosystems, yet these spaces are invisible to water users in Johannesburg. Invisible, that is, until the problem of soil erosion brings them into center view. The production of livestock for Basotho livelihoods depends on herder labor and hardship, yet they are displaced from the center of social life—at least until soil erosion brings them into center view.

Looking upon these rangelands brought into view by erosion is like looking at a photographic negative, where the trick of producing the photograph becomes clear. An inversion of shades and colors makes reproduction of the image possible. The Lesotho highlands are the photographic negative of South African industry. Lesotho is more than a “shadow” of South Africa, another metaphor used to describe the relationship between places connected across geographic distance through economic networks.² It is not simply an *effect* of South Africa. Instead, Lesotho and South Africa coproduce one another. In this way, I have come to think of Lesotho's rangelands as a “negative ecology.” In the glimmer of a fountain in Johannesburg's Sandton City Mall, a shrub-encroached pasture in Lesotho. In a gullied alpine wetland, a tactical security guard vehicle in Westcliff.

Envisioning Lesotho's ecosystems as a constituent but unseen part of South African industry (and vice versa)—as expressing something about that industry—also points toward a potential empirical strategy for a critical ecological science, making visible factors that are usually excluded from the frame of mainstream, positivist ecology, such as race, political economy, and history. Their invisibility, I would argue, is a product of the divide between humanities and the natural sciences, and it undermines our ability to respond to our planet's environmental crisis. A negative ecology calls for an account of these factors, but not only as a political economic backdrop, as is typical within ecological science or human ecology. These factors should be understood as ecological variables themselves. Rates of livestock grazing, for example, are typically reduced to a universal variable—“grazing density” or “grazing intensity,” depending on the question being asked. These are then measured by quantitative means or classed on a qualitative scale, such as by dung count or scheduled observations. These variables are useful abstractions, notably because they make statistical inference possible, but they bracket important questions, such as why those animals are there and not others, at what point in history they arrived, why they graze at a given density or intensity, and so on.

Are Lesotho's transitions from agricultural producer to labor reserve and from labor reserve to water reservoir simply a backdrop? Or are such changes constitutive of these rangeland patterns, insinuated into the assembly of this ecological community? Does it matter that young, poor, male herders graze

the animals, or is the measure of “grazing density” all we need to know? Just as postcolonial theory helped to provincialize the universal categories of western thought,³ we should provincialize the universal presumptions of ecological variables. To this end, negative ecology might be a useful, critical-scientific practice fit to the Anthropocene.

This chapter, then, presents an interpretation of ecological patterns in this specific landscape, but also an argument about how to interpret such patterns in general. Making this argument raises complex debates about interdisciplinary genre, empiricism, and theory. I don’t resolve those byzantine problems here, but rather call out from inside their darkened passageways.

ON DEGRADATION

In the introduction to this book, I described a visit to the cattle post of a man named Tankisi, a skilled negotiator of the water economy’s terrestrial politics. Tankisi understood the costs and benefits of different landscape interpretations, sensing the possibilities afforded by rangeland rules or institutions that coalesced around these interpretations. He endorsed the plans of conservation projects, even as he disregarded them where necessary. On our hike up the mountainside that day into those vast, common-property pastures, we passed by some agricultural fields which he had ploughed that year for the first time. This was odd. Planting crops in the cattle post areas is forbidden—not by law, but by a widely held understanding of the threat it poses. Livestock are not as closely watched at the cattle post as they are near the villages, so inevitably some will end up grazing in his fields. Tankisi would be within his rights to impound those animals, and the owner of the livestock would have to pay a fine. Conflict is imminent. In fact, Tankisi told me that complaints had already come to him through the chief.

I asked what he had planted. I assumed he would say wheat, which is sometimes grown at high elevation. Instead, he said, *habore*, a fodder grass. I was incredulous—Tankisi was cultivating grass in a grassland pasture. More than that, he had taken commonly held rangelands and privatized them by ploughing. In a sense, he was “dividing the commons.”⁴

Had Tankisi planted wheat, this all might have seemed less shocking—ploughing “marginal” land is somewhat common, even though rarely is it quite so marginal as this. But fodder grass? It meant that Tankisi had effectively lost faith that the rangeland could naturally produce enough forage for his animals, and that he felt compelled to hedge his bets by purchasing grass seed, laboring to plough, plant, weed, and harvest—all the while working to protect it from other people’s wandering livestock and risking conflict with his neighbors. He showed me a wire laying on the ground at his cattle post that he had been using to prevent his own sheep from heading to these *habore* plots at night.

A generation of scholars in political ecology and environmental history taught us to be wary of expert accounts of land degradation.⁵ They detailed Malthusian subtexts in complaints about rural land use and in the market triumphalism of “development.”⁶ They documented how conservation projects sometimes disenfranchised rural, indigenous, and otherwise marginalized people for the sake of eco-tourism, soil conservation, or biodiversity, questioning *for whom* nature was being conserved.⁷ These conservation projects, they showed, demonstrate an implicit (and sometimes explicit) belief among colonists, conservationists, and development workers that rural people are simply incapable of managing their “natural resources.”

I came to this project expecting to refute the notion that Lesotho’s rangelands were “degraded,” partly out of this suspicion and partly owing to the fact that Basotho livestock farmers appear to be so productive. If their land is degraded, how could they consistently export such an incredible amount of wool and mohair? But degradation was too widely agreed upon, and my observations of distressed landscapes were too numerous. Tankisi, for example, was not alone in ploughing his way out of a dependence upon the annual whims of rangeland forage. I met others doing the same.

But what is meant when people—me, conservation bureaucrats, herders, others—talk about “rangeland degradation?” In the ecological science literature, it can refer to a wide variety of changes, including declines in species diversity or richness, soil compaction, and other changes. There is no direct Sesotho translation for a term so semantically freighted as “degradation,” and in my conversations with conservation bureaucrats and water engineers, they typically used the English term to reference three things: soil erosion, shrub encroachment, or the decline of forage abundance. But in other moments, they were referring to increases in bare soil, diminished water-retention capacity, or several of these connotations in combination. Descriptions of decline by herders, livestock owners, and others in the rural Mokhotlong District usually employed the Sesotho term *ho fokola* (to be weak, barren, or to falter). That term is a catch-all for “poor condition,” but the specific condition to which herders and livestock owners referred was typically a lack of forage grass, rather than soil erosion or shrub encroachment. They emphasized that there were more livestock owners with large herds (*barui*) today than in the past, and that this put pressure on the range. But they also typically referenced the changing nature of rains. In response to the question, “How are the rangelands?” a common response was something like: “Hey, they are in poor condition. There is no rain, no grass.” Slippage between these different significations—by ecologists, bureaucrats, and herders—interrupts any consensus regarding interpretations of rangeland condition and solutions for their improvement, inciting disorientation in historiography of the landscape.

My attempt here is to sort through that disorientation, first by drawing attention to these different connotations as I have just done here and elsewhere in this

book. Second, I hope to recognize the environmental impacts of rural livestock production, but to resituate these impacts at an appropriate scale so as to rethink how agency and responsibility are assigned for rangeland degradation.⁸ In this, I affirm the fundamental truth of Piers Blaikie's insights about the influence of "non-place-based" factors in shaping land condition.⁹ Problems of scale are crucial to understanding soil erosion, Blaikie explained. While the immediate cause of an erosion gully might be livestock overgrazing, this disturbance of the soil only makes sense when understood in reference to the broader political economic forces that circumscribed people's choices about how and where to graze their animals in the first place: for example, the settler colonialism through which Lesotho lost significant territory; the country's domestic politics of land use and management; the strategic firming up of Lesotho's borders to regulate the flow of itinerant migrant laborers; the climatic changes that are making crop and livestock production more difficult; among others. Naming "overgrazing" as the cause of land degradation is to exclude all of that from view. Rural livestock production pushes against the limits of Lesotho's rangelands, but this strain is not strictly a function of management decisions, as I described in chapter 4: how many animals to graze, where, and for how long. It is one of marginalization, or the situating of Lesotho on an economic periphery. And, as I'll show below, also of the peripheral status of herders within Lesotho society.

So, let's follow the gaze of water engineers and conservation bureaucrats into the cattle post areas of the upstream catchment, the geographical margins that herders occupy. Before turning to hear from herders, I need to conjure the scene, to depict what it feels like to move through these cattle post landscapes. I need to give a rendering of the ecological patterns that are of such concern in Lesotho's water-export era, and which are subject to these diverging interpretations: by engineers and conservation bureaucrats, by herders and livestock owners, and by me.

PATTERNS IN THE LANDSCAPE

I took a walk in the highland cattle post areas—"the source" of the water-export economy's sedimentation problem as Tau had explained it to me in chapter 3. It was a bright April morning when I got off the bus near the top of the pass at Motšerimeli. I got lots of quizzical looks. The only people who visit cattle posts are herders and livestock owners, and they typically go by foot, by horse, or by donkey. There, a solitary herder, sometimes two, will stay for most of the year in a small, dilapidated rondavel with a stone kraal. Dogs stand guard.

I hiked up a spur that jutted out southward from the valley head. Trees are essentially absent in the highlands, and views from the ridgeline are majestic. From valley bottoms, they can be claustrophobic, the slopes are so steep.

At the base of the valley head was an alpine wetland in a state of decay. Hooves had punctured the plush, grass surface. Ice rats (*Otomys sloggetti*) scurried between



FIGURE 17. Wetland featuring active erosion, the mass wasting of clods of peat. Shrubs grow at its edges. Photo by author.

burrows at the edges. Thick clods of grass-covered soil hung from the wetland banks above a stream, with piles of the dark peat accumulating above the water's edge. It was clear that the stream was not a stream so much as it was a gully cut into the peat. Despite the clear effects of trampling, the road was in large part to blame for the degradation of this particular wetland. The specific name for the spot where the wetland was situated was "Hoekong." The Afrikaans word, *hoek*, in the name describes the spot well. The road is truly like a hook or corner, curving sharply as it switches back toward the plateau. Roads, which channelize water and thereby encourage erosion,¹⁰ have damaged many of these wetlands near the roadside, an accompaniment to the livestock impacts (see fig. 17).

I walked up the spur toward the ridge. Cresting it, I sat for a moment to look out over the area. The rangelands can appear monotonous from afar, but in fact there is tremendous variation. The palette and structure of the landscape express a multispecies politics and history.

A narrow band of open stream ran up the centerline of the valley below. Dark, organic, nutrient-rich soils, formed by the deposition of soil, plant materials, and livestock excreta emanated two to three meters out from the river. Rising steeply from the river was a shrubby zone, whose species composition varies by aspect. Those facing south were dominated by *Helichrysum trilineatum*, which favors the cold, moist, and slightly more acidic, mineral soils formed by that solar and temperature regime. Those facing north were dominated by *Chrysocoma ciliata*, which favors relative warmth and soils that are drier, with a lower organic matter



FIGURE 18. Cairn demarcating between the “A” and “B” rangelands, with cattle post in the distance. Photo by author.

content. Bushy patches of silvery blue *Inulanthera thodei* were situated in sheltered valley nooks, where occasional piles of scree could be seen. The largest, oldest, and healthiest shrubs were limited to the lower reaches of the valley, growing smaller and less dense toward the upper reaches. There, they become interspersed with smaller forbs, smaller tussock grasses, and the characteristic *Merxmuellera* tussocks spiking outward, a bunch grass whose high silica and lignin content makes it shine in the sun—good for grass-craft objects like hats and trivets, but poor for forage. A steep, grass-dominant zone at the upper limits reached around the valley and gave way at the top to bare rock and gravel where vegetation thins into the scraggly shrubs and herbs. There, annual grasses like *Aristida spp.* were interspersed. Brown bands of exposed basalt rock bending back from a spur speak to their continual exposure by runoff, trampling animals, and gravity.

A handful of cattle posts—some in use, some abandoned—were within view from the ridgeline (see fig. 18). Noticeable as a blotch of bare earth surrounded by the vibrant green of grasses thriving in the high-nitrogen soils where livestock urinate and defecate, they are not situated arbitrarily throughout the landscape, but are always within a short distance of a stream or spring, often perched on a spur. They are mostly found on the warmer, north-facing slopes, and sometimes two or three are grouped beside each other—the benefits being companionship and better security against thieves; the costs being increased grazing pressure in the immediate vicinity, the transmission of diseases, and the hassles of separating herds when animals mix.

At finer scales, other colors come into view. On the ridge, where I sat, the uncanny yellow ray florets of *Euryops decumbens* splayed out from a bright, yellow disk, all set against its scraggling, brown branches; the silvery green basal rosette leaves of small *Helichrysum* species erupted seemingly against all odds from dry, mineral soils; a mottled-brown lizard darted underneath a rock ledge. Mineral sediments as well as organic plant matter are continually added to the soils on the slopes below, accumulating in a colluvial pan where the wetlands form. A distinct set of plant species grow on the wetlands. Their long root systems can reach several feet into the soil profile, which become visible when erosion gullies expose them. The relative absence of air in the pores between waterlogged soil particles create conditions that prevent decomposition, meaning that organic matter accumulates and accumulates.

I spotted an area in the distance that clearly had been burned within the last year or two, with a distinctly green zone filled with grasses and fewer of the dark green shrubs. The burn must have been managed, as it ended abruptly in a more-or-less straight line. It resembled another pasture that had been burned during my field research. That was September 2014, and when I hiked through it in the month afterward, I found that almost none of the vegetation had visibly survived, with some rather large shrubs leaving behind only devegetated stems; a very sparse cover of grasses and forbs had begun to establish. When I visited the site again in February 2016, the place had already seen a significant amount of regrowth. Plenty of dwarf shrubs had begun to regrow from root stock at the base of those same scorched stems, suggesting that pasture burning, a commonly used management tool across the globe to control shrubs, probably does little to diminish the abundance of these populations, even though it would prevent them from growing to their full height at maturity.

Looking out across these open highland vistas, one feels as distant as can be from city life, or even from village life. It is so quiet, the insects are loud. Bucolic though these rangelands may seem, they hum with the bustle of the city.

NEGATIVE ECOLOGY

From the ridgeline, I saw a herder walking down toward the wetland. I decided to go speak with him. As I approached from a few hundred meters away, he started singing loudly and did not respond to the greeting that I yelled out to him. He clearly did not want to speak to me—it was impossible that he did not hear or see me. Declining a greeting is unheard-of in Lesotho, an extraordinary breach of etiquette that I don't recall ever experiencing in my years there, where greetings are an entire domain of social life.

As I walked past his flock, I noticed several sheep had been carefully adorned with ephemera: old plastic bags of various colors; flags that reached one to two feet into the air; pom-poms of nylon string hanging from their foreheads; bits of

material tied to dangling strings as tassels; and even a reflector vest from the mines or construction work.

After walking back up on the ridge to look out over the next valley head, I sat on another rock and rested. I could see a herd of about forty sheep, thirty goats, and eight cattle—but I strained for some time to find the herder. I have often found my sense of distance is compromised in the mountains. The field of view can be disorienting. When I noticed him—a gray spot on the landscape—he may have been a kilometer away, but perhaps closer. I called out to him in the manner custom to the rangelands, with drawn out enunciation and ostentatious masculinity: *Ntaaaaaateee, keaaaa tla hee, kea u lumeliiiiiiisa!* (Hey, I'm coming over to greet you!). He hollered something back—most of it was indecipherable to me, but it included an affirmation.

The herder was an older man, which was unusual. Most herders in the cattle post areas range between fourteen and twenty years old.¹¹ They were not always so young, but the migrant labor economy prompted a pattern in which, while older men were away working in the mines, their male children took their place at the cattle posts. When arriving at working age, those young men would head to the mines and younger ones would take over at *motebong*.

We walked toward each other across the wide valley, and he corralled some of his sheep and goats together as he went, whistling and shouting, throwing an arm into the air. He picked up a rock and threw it sidearm at a sheep in the distance. With the astonishing accuracy possessed by every herder I've met, the rock landed just on the far side of the sheep, nudging it away from the perimeter of the herd.

He wore typical herding clothes: tattered pants, gumboots, a shirt, and a gray blanket. As he threw stones to draw other animals back into the herd, his blanket rose at the arm and got caught by the wind, which blew it back along with the rest of the blanket beneath his waist. His balaclava was stretched and sagging beneath his chin to frame his entire face, yet he nevertheless had a habit of pulling it down from time to time as he spoke. His blanket was, like most herders' blankets at the cattle post, old and torn. He carried a herder's stick (*molamu*), as all herders do. His black boots had patches at the stress points—the toe crease and other spots along the sole. His socks were the typical stockings, bunched up at the top of the boots where, in place of elastic, they were fastened with a string just above his calf.

His name was Mothusi. I told him I hoped to talk with him about herding and rangeland condition, and we sat down in a grassy patch, surrounded by small *Helichrysum trilineatum* shrubs. It was not so windy on this side of the valley, relatively speaking. I was surprised to learn that he was from a very distant village in Thaba-Tseka District, and had only been herding at this cattle post for one season, working for a man from Tlokoeng. Like many herders, including younger ones, he was an itinerant laborer, moving periodically from one cattle post to another—a year here, two years there—but he had come farther than usual. Many

herders I met were from the most rural of villages, but hired by wealthier livestock owners from towns in Mokhotlong District, like Mapholaneng or Tlokoeng.

Mothusi was clearly extremely poor. He told me he had no animals of his own, having lost most of his small herd over the previous few years to drought, theft, and sale. He was fifty years old, meaning that he grew up at a time when mining employment was relatively abundant and nearly a rite of passage for young men across Lesotho. Yet he never did work in the mines. I was surprised. Did he not want to work there, I asked?

He had wanted to, he said, but after having done some “piece jobs” in South Africa while looking for stable work, he was robbed at knife point and decided to come back to Lesotho where he worked as a builder. He and his wife were not able to conceive children. She had died a few years earlier. With no construction work in Thaba-Tseka, no support from children, and a diminishing herd of sheep and goats, he decided to return to herding at the cattle post, as in his youth.

Mothusi’s twelve months of work at *motebong* would be compensated with livestock, just as it is for every herder I’ve met: either twelve small stock (sheep, goats, or a combination of the two) or one head of cattle. Herders have been paid the same amount for at least fifty years, as was confirmed to me by men in their sixties and seventies. During my many conversations with herders, some told me of their dreams to get a job in the mines, even despite the odds against landing one. Quite a few wore a hardhat as though they already did. Others sought a life as a farmer, building up a herd, selling an animal when cash was needed, trafficking sheep to butcheries over the border in Qwa-Qwa, selling the wool and mohair from small stock, and eventually hiring a herder to keep their animals at the cattle post when their herd grew large enough to pay one.

Mothusi and the man who declined to greet me hint at the heterogeneity within herder social worlds. Yet, both capture a sense of herders’ peripheral position within Lesotho, and of Lesotho’s position within Southern Africa, including the region’s material culture, its violence, and its opportunities. Just as men like them were drawn into South Africa’s mining industry, while also being expelled to its margins—the “disjunctive inclusion” to which Achille Mbembe refers¹²—so, too, for herders within Lesotho society, as I’ll show in the next sections. This position is encoded in traces in the land, the spacetimes of the pasture.¹³ Lesotho has been transformed off-site by South African industry and the social worlds that coalesced around it.

THE SPACETIMES OF FREEDOM

Livestock production is not simply a “livelihood strategy.” It is a social and cultural practice, contested along lines of gender, class, and generation in Lesotho.¹⁴ The herders (*balisana*) who labor to produce livestock work within a world that is both firmly *inside* the Basotho cultural mainstream and at its farthest edges.¹⁵ Some of the most charismatic figures in Lesotho society, herders are often depicted as

iconic of Sesotho culture. As with the “national water” I described in chapter 1, herders are nearly certain to appear on any given tourist brochure for the country and promotional materials for the Lesotho Highlands Water Project.¹⁶ A 2014 feature-length film about life in Lesotho, *The Forgotten Kingdom*,¹⁷ drew upon this figure when it included a young herder character that operated as both a jester and a sage, guiding the protagonist through remote parts of the country and helping him to overcome his personal struggle.

The herder attire—a gray blanket, balaclava, herding stick, and gumboots—is emblazoned across Lesotho’s cultural landscape. The immensely popular “famo” musicians regularly use the attire to assert their cultural roots, though few of them these days would have been resident at a cattle post—they are typically lowlands-born Basotho.¹⁸ Herders do work that is critical to the Basotho household, caring for the animals that plough agricultural fields, provide families with milk, and produce wool for cash. And, they do so under serious physical duress. At *motebong*, herders’ diets consist almost entirely of maize meal (*papa*), with wild greens (*meroho*) only when in season; they live under threat of lightning strikes and livestock thieves; jackals lurk behind shrubs and prey on their lambs; they endure rain and snow; and they care for animals twenty-four hours a day, seven days a week. There are no weekends at *motebong*.

Despite this embrace of the cultural symbols associated with herding and the centrality of herding to Basotho livelihoods, herders are largely seen and treated as outcasts in everyday life (see fig. 19). When in town, they cut an awkward and edgy figure. They do not small-talk well—including with other Basotho—and often wear their balaclava over their face, even when inappropriate. Many are illiterate, having been prevented from attending school because of their herding duties, and they are often portrayed by adults as being rude, disrespectful, and sometimes even dangerous.

I asked three young men working at neighboring cattle posts in Mokhotlong District whether they enjoyed staying at *motebong*. It was the late winter and the sun had only recently risen over the ridgeline. The winds had already started gusting. The day would be like many others: they would eat a breakfast of maize meal and head out with their herd of sheep, goats, and cattle to the pasture near the seep at the head of the valley. They would sit and chat, play a game called *morabaraba*, take a nap. After midday, when the animals seemed content and the herders became hungry, they would drive the animals back to the kraal and settle down for a maize meal supper. In the morning, they would wake to do it over again.

As we stood, the brown earth stretched out around us, up and downhill. On account of their being, as they put it, too “lazy” (*botsoa*) to fetch water down the hill, they ate the remnants from last night’s maize meal for breakfast instead of making a fresh pot. All three responded emphatically to my question: yes, they like working at *motebong*. Why?

“Because we do what we want. We are independent. There isn’t anyone who can tell us what to do out here.”



FIGURE 19. Herders at the cattle post. Photo by author.

“Who tells you what to do when you’re in the village?” I asked.

One responded: “*All* the adults—people like Motlokoa.” Motlokoa was the chief’s uncle and more than a little imposing. They mentioned Motlokoa because they knew he was a friend of mine, but the herders were referring to *all* adults (*batho ba baholo*).

Their response struck me. This was clearly a lonely and difficult life—and, to be sure, they would take other, good-paying work if they could find it. But the cattle post areas were spaces of freedom for them. They were spaces of independence and of responsibility on one’s own terms, even if also of marginalization.¹⁹

It would be forty-five minutes before we left to take the animals to pasture. As we stood chatting, one of them leaned against the doorway opening to the rondavel. Unlike most cattle post rondavels, theirs had a corrugated metal roof instead of a thatched one. Large rocks lined the roof, holding it in place to withstand the strong winds that could easily blow it away. As he leaned, some of the rocks began to give way and several large ones came crashing down, knocking over the three-legged cooking pot containing the maize meal before rolling downhill. The largest of them rolled five hundred meters or more down the slope as we watched in silence. Everyone burst out laughing. These were young men living on their own, free to be absurd and reckless. I scanned the horizon—nobody for miles.

ENGINEERING FORAGE

Rangelands are degraded. The rains are changing, and changing for the worse. Forage is insufficient, shrubs are encroaching, wetlands are gullied and dying.

It begs the question: how is it that Basotho are producing wool, mohair, and mutton in such great quantities? I presented one reason in the previous chapter, which is that breeding and veterinary care have both improved tremendously over the past century.²⁰ This means that the amount and quality of wool or mohair per animal is far higher than it once was. I also showed how Tankisi and Lesuhla (see chapter 5) were planting fodder to supplement the rangeland forage. Another reason, however, is that herders are forage engineers. They use medicines to transform vegetation from unpalatable to palatable. They set fires to draw nitrogen-rich grasses out of the soil.

Inside any cattle post rondavel, spare as can be—just a three-legged pot, a sack of maize meal, a few boxes of matches, and one to two beds made of stone platforms covered with shrubs for padding—one can almost always find a small jug of *nyopo-nyopo* and a bag of salt. *Nyopo-nyopo* is molasses infused with other substances or medicines (*meriana*). When speaking with herders, I would ask what they used these for, and herders would explain that it was “so the animals will be able to eat and drink water” (*hore li khona ho ja, hore li noe metsi*). I often thought to myself: why wouldn’t an animal know how to eat when it was hungry or drink when it was thirsty? Further questioning only elicited similar answers.

Back at Tankisi’s cattle post, shortly after he had told me the “joke” about how livestock selectively graze, described in the introduction of this book, I came to a realization: salt and *nyopo-nyopo* were strategies for keeping animals alive in a degraded rangeland. He had carried on from that joke to explain that sheep have good memories. When forage is low, he said they will leave the herd, sometimes even at night, to go find forage they recall from another day—particularly during lean winters when forage is poor everywhere else. He pointed way down the valley toward the road, from which we had just hiked. He said that sheep might head all the way down there in search of forage, and that herders must be vigilant.

I asked, “What can herders do to prevent that when forage is low?” It seemed to me that would be a constant problem during droughts and the dry winter months.

“They give them *nyopo-nyopo* and salt, so the animals will be able to eat.”

I had been doing this research for many years by this time, but it only occurred to me in this conversation with Tankisi that herders use these supplements to entice their livestock to eat plants they would otherwise avoid: unpalatable plants, like shrubs, annual grasses, or grasses that were simply past their nutritious prime. Herders use it most commonly in the winter, from June to October or November. In the summer, from January to April, no *nyopo-nyopo* is needed because they find all the nutrients (*matsoai*) they need from the grasses they eat. One herder told me

that he would scatter it in a circle in the morning outside the cattle post: only salt in the summer, once per week; salt with *nyopo-nyopo* in the winter, three times a week. The livestock eat it with glee.

More than that, Tankisi said, herders use the supplements to get their animals to come back on their own to the kraal. In these unfenced cattle post areas, after all, one does not herd. *Motebong ha ho lisoe*. I chuckled to myself after this because, whereas conservation bureaucrats promoted the Savory rotational grazing method I described in chapter 4, including fencing or “active herding” to delimit the spaces in which livestock graze and circumvent the problem that livestock graze selectively on palatable forage, herders have developed an alternative solution to these problems. They use *nyopo-nyopo* to configure livestock movements and entice them to eat unpalatable plants.

A second way that herders engineer forage is by setting fires to elicit grasses from the soil. Herders are famous for setting rangeland fires, and these are prohibited by law because they are widely seen as encouraging soil erosion. The fires rid the range of the old leaves from *Festuca caprina*, for example, a perennial, fire-adapted bunchgrass that produces a tremendous amount of dense leaf growth, which, if not eaten, can accumulate and discourage additional growth. Burning the rangeland can remove these accumulated moribund, high-carbon leaves and stimulate the growth of new, nitrogen-rich shoots (*thoko*). Sheep—especially lambs—love these new shoots. This is a common practice worldwide, but in Lesotho it is condemned for its effects on soil stability. If the range is not given sufficient time to rest before livestock are introduced, or if heavy rains come before vegetation has regrown sufficiently, then the land is exposed and incapable of retaining its top layer of soil.

Engineering forage has consequences beyond increasing soil erosion. I had often been struck in my conversations with women about changes in the landscape that, rather than decry the proliferation of shrubs as men did, they complained that there were no longer *enough* shrubs. Women and girls are tasked with collecting shrubs for cooking fuel in village areas, and there are few good stands of shrubs near highland villages. While shrubs may be proliferating in the cattle post areas, then, they have diminished in the areas surrounding villages, where they are needed as fuel. This, many women told me, was because of herder pasture fires that had eliminated the large shrubs that are useful for cooking. It wasn’t that there were no shrubs near villages, but rather that the shrubs were small and worthless. After all, fires do not remove shrubs completely. Many of the most invasive shrubs are fire-tolerant, able to regrow from basal meristems at the soil surface, as I described earlier.

If fires are harmful, causing soil erosion and ruining fuel sources, I would ask, “Well, then why do herders continue to do it?” With remarkable regularity, a wide diversity of Basotho women and men in the highlands would respond by saying that herders are *setoutu*. *Setoutu* is a Sesotho word that could be

roughly translated as “stupidity,” but that specifically connotes carelessness and irresponsibility: the stupidity, perhaps, of young men. As one person put it, someone would be described as *setoutu* when they know something is wrong but they do it anyway.

Herders are largely aware of the link between pasture burning and soil erosion in my experience. Because it is illegal and taboo, however, it was difficult to tell if they believed it was true, much less for them to confide in me about whether they or nearby herders do it. But soil erosion is not their concern. Engineering forage to feed to their flock is what matters. Herders and their livestock are agents of degradation, but they are better thought of as “making do” in degraded landscapes—a product of their structural position as central to rural livelihoods and national identity yet also on the periphery. Their peripheral position within society, however, means that measures taken to change their behaviors, whether by conservation bureaucrats or ordinary Basotho, are unlikely to reach them. Herder freedom at the cattle post means that they are unbound by obligations to those in town. Their translation of herding work as freedom makes herding valuable and worthwhile to herders, but it also draws them out of social control. It is yet another impediment to addressing erosion.

. . .

Having reached the next, penultimate section of this last chapter, I’m now in a position to assemble a landscape history informed by the foregoing pages and chapters. It is a landscape history based on a reading of my ethnographic and ecological data, archival sources, and ecological theory. In it, I traverse the different senses of degradation, including declines in biodiversity, the encroachment of shrubs, and soil erosion.

I have shown throughout this book that the search for South Africa’s water security has interpellated theorists of water’s flow across the landscape, an incitement to the fluvial imagination. A proliferation of discourse on the topic has generated disorientation as to the nature of water—its meaning and materiality. I’ve tried to document that disorientation, sounding its depths for all its implicit significations. More than simply amplifying the disorientation, however, my hope here is also to clarify it, reorienting us with an alternative landscape historiography.

SHOCK TROOPS OF EMPIRE—AND SURVIVAL

In the previous chapter, I showed that development and conservation experts have sought at least since the 1980s to commodify cattle as a way of improving land condition in Lesotho. They argued that the cultural status of cattle in Basotho society incentivizes the acquisition of more cattle than the landscape can accommodate. Such a narrative ignores the fact that sheep and goats have been earnestly commodified for global textile markets for over a century. Small stock

have heavily outnumbered cattle for decades, and their numbers have been high *precisely because they were linked into global textile markets.*

In an important sense, small stock instigated the settlement of the highlands in the first place. Sheep have been like “shock troops” of empire,²¹ turbo-charged by colonial efforts to promote wool production. Yet they have also served as tools for survival, enabling rural people to navigate the historical moment, be it during the labor-reserve era or the water-reservoir era. These two related processes—of extraction and of survival—have catalyzed rangeland changes.

Sheep are known to be a particularly destructive animal,²² including by many people in rural Lesotho. A herder named Lumisang explained to me that “sheep spoil the range the most because of how they eat [so close to ground],” making a pinching motion with one hand into the palm of the other. When I suggested that, perhaps cattle also have a big impact on account of being so heavy and trampling vegetation, he and the herder he was with both stopped me before I could finish: “No, no. Cattle don’t trample, they eat just fine.” They conceded that cattle consume more forage than small stock, and that cattle trampling is a problem in the wetland areas, where they can puncture holes in the peat and encourage erosion. But they were otherwise insistent that sheep were the type of livestock affecting the rangelands most. In effect, where there was concern among rural Basotho during my field research regarding grazing-induced land degradation, it was primarily with small stock—not with cattle. Once, a councilor told me and my friend from the ministry that in the area under his jurisdiction, small stock are fined more severely than large stock. For each cow, horse, donkey, or mule impounded for grazing in closed pastures, the owner is fined 20 Maloti. For each sheep and goat, they pay 50 Maloti. When asked to explain why they charged more for small stock—the official regulations fine more for cattle (M4/animal) than sheep and goats (Mo.60/animal)—the councilor said it was because small stock destroy the range more than the large stock.

The relative importance of livestock to vegetation changes is variable across ecosystems, as I noted in chapter 4. Particularly in arid and semi-arid systems, precipitation is often so variable from year to year that it is the primary determinant of vegetation and other aspects of land condition. The Lesotho highlands have high interannual rainfall variation, suggesting this possibility. However, the total annual rainfall is higher than in a semi-arid zone and Lesotho’s climate is considered temperate, suggesting otherwise. Beyond parsing the relative influence of livestock grazing versus climate, however, it is hard to argue that livestock are benign figures in Lesotho’s highland pastures, or that herder alteration of the landscape, such as pasture-burning is harmless.

The historical absence of heavy, sustained grazing in the highlands is significant, too. Prior to the introduction of sheep in the highlands, this territory was not accustomed to intensive grazing. Ungulate herbivores were present in the highlands in prehistory as seen through archaeological study and some early

historical records, but probably in much smaller numbers than domestic livestock of today.²³ Unsurprisingly, the higher reaches of the mountains were home to fewer mammalian herbivores in terms of diversity and population size—the relative lack of woody plants, for example, would have limited the number of browsers.²⁴ And they probably migrated into the highlands in the summer rather than residing year-round. These naturally occurring large herbivores and their carnivore predators were likely exterminated by 1900 as livestock took their place.²⁵ Gray rhebok (*Pelea capreolus*) and mountain reedbok (*Redunca fulvorufula*) can be found today, but in small numbers and only in the most remote reaches. Like them, domestic livestock initially grazed the highlands during the summer only, and remnants of that system of vertical transhumance endure in the A-B-C system, as I described in chapter 4. Since the mid-twentieth century, however, many areas have come to be occupied year-round.²⁶

Rangeland ecologists have shown clearly that the evolutionary history of a plant community shapes the magnitude of livestock impacts (e.g., on species richness, species diversity, community structure and other factors).²⁷ In a pasture that has been historically only lightly grazed (or browsed), for example, a steep increase in grazing will have a substantially greater impact than if the pasture had a long history of intensive grazing. The reason is that the vegetation in lightly grazed pastures is not adapted to endure the impact of livestock, which includes not only defoliation but also trampling. Their tolerance threshold for recovering from this disturbance is lower and, as a result, more susceptible to shifts in vegetation (see fig. 20).²⁸

The late nineteenth-century introduction of sheep into pastures that had not experienced significant grazing pressures almost certainly led to heavy losses of species richness and diversity and triggered localized shifts from grassland and grassland-shrub mosaics to shrubland. The loss of browsing animals would've also allowed shrubs to spread unchecked. If the transition were reversible, it is prevented today by a combination of grazing and periodic drought,²⁹ both of which disfavor herbs and favor shrubs. Soon after the highlands were settled for small stock pasture in the late nineteenth century, colonial administrators would be sounding the alarm about overgrazing and other land degradation stemming from agriculture in the highlands. One described pastures “invaded by inedible weeds,” presumably referring to burweed, which spoiled the wool and mohair clip, and the dwarf shrub *Chrysocoma ciliata*, which was known to crowd out grasses.³⁰ Basotho, too, were complaining about the situation, such as in a 1912 letter published in the newspaper *Leselinyana la Lesotho*, titled “Makhulo a Felile” (The Pastures Are Finished).³¹ In 1947, the British closed off approximately fourteen hundred square miles of mountain rangeland cattle post areas in Mokhotlong and Qacha's Nek Districts, where the *Chrysocoma ciliata* invasion was said to be most severe,³² though it is unlikely that Basotho adhered to that closure.³³

Just as British colonial concerns about degradation flared, however, they were building roads and bridle paths to encourage wool production for colonial tax rev-



FIGURE 20. A negative ecology. Photo by author.

enues. These pathways accelerated wool production in the early to mid-twentieth century, built to ferry wool from the highlands to the markets beyond. They also created a regularly disturbed pathway for shrub encroachment and the channelization of water.³⁴ It is clear to any observer that certain shrub species like *C. ciliata* thrive along the heavily disturbed roadsides and bridle paths. *C. ciliata* has long been present in the highlands,³⁵ but it and others that similarly like disturbance have expanded their ranges and population sizes thanks to livestock grazing, drought, and these roads and paths.³⁶ Ecologists and botanists have suggested that today's invasive weeds were confined to valley coves and Cave Sandstone overhangs where animals were sheltered in the early days of highlands grazing of the late nineteenth and early twentieth centuries before expanding into grass-dominated areas by moving along pathways such as livestock trails.³⁷

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Negative ecologies raise profound empirical problems, as well as ethico-political ones: how do we assign responsibility for environmental degradation when drivers of environmental change can be so multifarious, indirect, or occluded? At heart, however, this is consistent with a basic question in ecological science, namely: how can one discern the factors that give rise to ecological patterns when a landscape presents itself as fully formed? My contention is merely that the factors

available for consideration within ecology are often too narrowly conceived to meaningfully interpret these patterns.

Shrub encroachment, degraded wetlands, and denuded hillslopes are the by-products of a system of livestock production in Lesotho. Yet, that system is itself a by-product of the water-export economy—and the labor-export economy upon which it was built. As Raymond Williams has shown,³⁸ the by-products of a system are truly its products. Abiotic factors such as climate are profoundly important in determining the condition of land in Lesotho. But to the extent that livestock contribute to the production of landscape patterns there, these patterns express the pressures of a regional political economy, as well as of the aspirations and marginalization of herders who work within it. Living in post-labor-reserve Lesotho, herders not only produce livestock, but also the conditions that promote soil erosion. While those responsible for establishing Lesotho's export economies—of labor and of water—seek to engineer storage, herders are compelled to engineer forage. They are not the sole cause of erosion, but their position within Lesotho society encourages it, a situation that illustrates how identity can be empirically valuable for seeing ecological process. Their sense of freedom at the cattle post makes their work worthwhile, but this independence also delinks them from even the most well-thought-out rangeland management program.

I've offered an alternative interpretation of the shrub-encroached and eroded landscapes of the highlands to the one put forward by conservation bureaucrats. Whereas they saw an overly dispersed herd and a lazy herder leading to shrub encroachment, declines in good forage grass, and wetland degradation, I've shown that the evolutionary history of grazing in the highlands, the timing of livestock introductions, marginalization, and the wildly successful colonial efforts to promote wool production are central factors in shaping land condition. Herders are well aware of how livestock preferences shape livestock movements, and about the preponderance of unpalatable forage. Rather than taking up "active herding," though, herders elect to stimulate livestock appetites with *nyopo-nyopo* and to draw young grass shoots from the ground with pasture fires.