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Just before sunrise, I woke to the rustle of the Quispe¹ family getting out of their beds of heavy blankets, handwoven by an elderly neighbor from sheep's wool dyed bright, synthetic yellows, reds, blues, and purples. My adobe wall room was adjacent to the family room, and so while we had our private spaces, the sounds of morning activity were my daily wake-up call. The men slipped on warm pants and the women a colorful wool skirt called a *pollera*. They all donned sweaters, and the kids added a coat. Although it was summer on the Taraco Peninsula, the temperature outside in the morning was a bit chilly, around 10°C (50°F). It was February, and several nightly rains this week had created a damp coolness outdoors.

The Taraco Peninsula is located in modern-day Bolivia and juts into the smaller, southern basin of Lake Titicaca, known locally as Lago Wiñaymarka. Lake Titicaca is the world's highest navigable lake at approximately 3,660 m a.s.l. (figure 1.1). It is situated in what is known as the *altiplano*, or high plain, which extends between latitudes 15° S and 22° S where the Andes split into two ranges (Allmendinger et al. 1997; Clapperton 1993). Taraco families living on the northern side of the peninsula, as we were here, have a view of the snowy eastern Andean range.

The father and son, Julio and Nicolas, headed down to Lake Titicaca to recover the morning's fish catch. Their house, built of a combination of locally made adobe and factory-made bricks with a calamine roof, sits

*Indigenous Agriculture and
Resurgent Communities*

*Defining Taraco
Peninsula Landscapes*

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FIGURE 1.1. Location of Lake Titicaca in the Andean altiplano

at the top of a ravine, or *quebrada*, cut out by a small stream. They walk down a slightly rocky but gentle slope toward the *Eucalyptus*-lined dirt road, which extends around the perimeter of the peninsula. Past the road the land flattens out where silty brown and black soils are covered in dense green grasses. This flat plain or *pampa* terminates in the shimmering, crystal-blue lake with towering snowcapped mountain peaks in the distance. I can't speak for Julio and Nicolas, but I lose my breath every time I glance upon this striking vista.

They arrived at the lake where their blue and red wooden boat was anchored in an area where they had cleared the thick growth of tall *totora* reeds. They didn't have to walk out quite as far as they do in the winter months because the rains have brought the lake higher up the plain. They then rowed out a few meters to find the floating pieces of Styrofoam that mark where their plastic nets have snagged a variety of native and introduced fish below the cold blue waters.

All along their journey, from hilltop to lakeshore, they passed a landscape filled with fields. In most of the fields that day, potatoes were blooming with purple and white flowers and bright yellow anthers. Some fields had a plant with triangular green leaves, a yellow flower, and a yellowish, red tuber growing underground, known as *oca*. Several fields had alternating rows of maize and fava beans, both tall and green. There were even a few rows of quinoa with bright red stalks and brilliant pink, red, and yellow panicles filled with thousands of tiny white, yellow, and red seeds. Thriving alongside the crops that families in the village had carefully planted in rows between September and December were a variety of wild plant species. One resembles quinoa but is shorter and has dark purple flowers and seeds. Another one, a wild mustard or *ñustasa* (*Brassica rapa* L.), has broad green leaves and bright yellow flowers. Later in the day, the mother, Alejandra, will head out to the fields with a pick to yank out these unwanted species and repair the mounds of earth and furrows around the crops, a task called *th'aruña*. Before this task, however, I helped her put the animals out to graze.

First, we grabbed a bucket filled with the scraps of yesterday's meals and walked a short distance down the hill to the animal pens. The scraps were served to a mama pig and her four little piglets in their small pen. They squealed in delight. We then walked to the nearby sheep pen, opened the small gate, and ushered them to one of the fields uphill from the house that was not in production this year. Here the same wild plants that will later be removed from the potato field were free to grow and thrive, providing food for the sheep. Finally, we moved their cow, tied near the house, down the hill to a grassy patch near the stream. The animals will be moved throughout the day to new pasture areas, most of which are "resting" fields. The teenaged daughter, Valentina, will also go out into the lake in the afternoon to cut down some of the *tatora* reeds and pull up a plant growing under the water, called *lima*, to supplement the animals' mostly terrestrial diet. Alejandra will also collect the weedy plants she pulled out of the fields into her light, brightly colored textile called an *aguayo*, strap it on her back, and feed them to the animals.

On the Taraco Peninsula and throughout the Lake Titicaca Basin tasks involving the collection of resources from the lake and tending to domesticated animals and plants occur every day of the year, varying based on the season. I begin with this description of a typical day on the peninsula because it introduces the human and nonhuman actors from which this story of agricultural landscape creation and sustainability unfolds. The patterns of humans, land, water, plants, and animals that I describe here are as I experienced them on the peninsula in 2003 and 2004, when I lived there for 12 months to study

agricultural practices for my dissertation research.² I have returned on nearly a yearly basis over the past 20 years, and with a few exceptions, these practices have remained largely the same. If we were to zoom back 100, 1,000, or 2,000 years, some of these descriptions would be similar: the general topography and types of soils, the mountains in the distance, some of the animals (fish like *mauri*), plants like quinoa, and activities like weeding. Many aspects would also be very different, depending on the year, the lake would be much lower and more distant, the distribution of soils would be higher up or lower down, instead of sheep there would be llamas, instead of fava beans there would be more quinoa, and perhaps less weeding might have been needed. Additionally, and not inconsequentially, the social and political milieu in which these daily activities took place would be very distinct. The imprint of 500 years of colonization by Europeans and the subsequent struggles of Indigenous communities to regain ownership over the land itself has played an enormous role in what we experience today.

In this book, I trace the long-term history of Indigenous agriculture on the Taraco Peninsula through the interactions of inorganic, organic, and human elements of this landscape across the earliest periods of settled, farming life approximately 1500 BCE to 1100 CE. This, in turn, provides a model of sustainability through flexible yet persistent interactions of humans and their environment. I argue that Indigenous Taraco communities are examples of what Anna Tsing refers to as “resurgent communities” as they have confronted profound environmental and sociopolitical changes and have employed generational knowledge of water, soils, animals, and especially plants to sustain their families and continue to thrive into the present day.

I study the elements of Taraco’s past agricultural landscapes through an examination of archaeological evidence preserved within and beneath the modern-day fields and pastures. In 1992, Christine Hastorf began the Taraco Archaeological Project (TAP), which has included the excavation of several Formative (1500 BCE–500 CE) and Tiwanaku (500–1100 CE) period sites on the peninsula as well as a full inventory of all archaeological sites visible on the surface, carried out by Matthew Bandy. From this long-term project a wealth of information about the past lives of the Taraco inhabitants has been recovered and studied. I have been a member of TAP since 2000. While I draw upon the full range of archaeological data related to ancient agriculture in the region, I focus specifically on ancient plant remains as they provide crucial insight into not only the crops people raised and consumed but the impact that a range of agro-pastoral activities had on the ecology of the peninsula. In doing so, I track the development of farming on the Taraco Peninsula

and the roles it played as its earliest human communities grew and changed. Elevating the histories of human-plant interactions and agriculture, in turn, disrupts some long-held beliefs about past social and political trajectories in the Lake Titicaca Basin, pushing us to rethink traditional social evolutionary ideas about how these societies changed.

Such a project would not have been possible without the current Indigenous inhabitants of the peninsula. They have not only granted permission to archaeologists to dig up ancient remains in their fields but also have done much of the digging alongside us. Most importantly, however, has been their generosity in teaching us about what it means to live on the peninsula, to see, interact with, and learn from its nonhuman elements. My understanding of how to interpret the archaeological evidence is based on the education they provided me about land, water, plants, and agriculture as they experience it today.

AYMARA FARMERS OF THE TARACO PENINSULA, BOLIVIA

Bolivia is unique in that nearly half of its population belongs to one of 36 Indigenous ethnic groups (INE 2012). Today's residents of the Taraco Peninsula self-identify as Aymara. As with any identity, what constitutes Aymara is complex and fluid. On the peninsula as well as other places in Bolivia, this affiliation is expressed and recognized through shared yet dynamic language, dress, beliefs, and practices. According to the 2012 Bolivian census, approximately 55 percent of the rural population in the Department of La Paz learned Aymara as their first language (INE 2012). Most Taraco inhabitants speak the Aymara language. Although many are bilingual in Spanish, older members of the communities speak only Aymara, and there are some younger residents who speak only Spanish. Linguistic and genetic studies suggest that the wide adoption of Aymara as a common language in the Bolivian highlands was relatively recent. At least two other language groups, Uru and Pukina, also existed in the lake region when Europeans arrived in the fifteenth century (Bouysse-Cassagne 1992). While Uru is still spoken in small pockets of communities in Bolivia and Peru, the Pukina language is now extinct (Adelaar 2004). The Spanish lumped speakers of these three languages together as a single category of "Aymara" for taxation purposes, and this eventually became the unifying term and language for the populations around the lake and much of the *altiplano* (Bouysse-Cassagne 1992). It is unknown what language was spoken by the residents of the Taraco Peninsula when the Spanish arrived. Based on continuities in material culture, many archaeologists argue for Aymara being a long-lived language in

the region, starting at least with the Tiwanaku state (Browman 1994; Stanish 2003). Linguistic evidence, however, suggests that Pukina may have been the primary language of the Tiwanaku state, while Uru appears to be the language long associated with lakeshore dwellers (Adelaar 2004; Torero 1987). Genetic studies suggest a long history of population expansion and admixture across the central Andes by both Aymara and Quechua groups, possibly beginning with the spread of agriculture in the Formative period (Barbieri et al. 2011; Batai and Williams 2014). Yet examination of genetic relationships with contemporary Uru and Aymara groups indicates some diversity within these populations, supporting the hypothesis that Uru and possibly Pukina speakers adopted Aymara due to pressures from Spanish control (Barbieri et al. 2011; Bouysse-Cassagne 1992).

Apart from language, there are a variety of cultural practices, including clothing, foodways, rituals, and belief systems, that contribute to one's identification as Aymara in Bolivia today, including the Taraco Peninsula (Albó 1979, 2000; D. Arnold, Aruquipa, and de Yapita 1992; Buechler and Buechler 1971; Canessa 2012). For example, most adult Aymara women wear distinctive clothing. This usually includes a full, brightly colored *pollera*, a sweater, and a shawl draped over the shoulders and pinned at the front (*llecla*). While other styles of brimmed hats are becoming popular, women most commonly don a bowler hat, which became popular in the early twentieth century. As this typical fashion illustrates, contemporary Aymara practices are mixtures of pre-Hispanic Andean, European, and modern influences that reflect the dynamic ways in which Indigenous populations adapted to and also resisted colonial pressures (MUSEF Editores 2019). Likewise, you will meet many women who speak fluent Aymara and prepare typical dishes, yet do not wear a *pollera* and still consider themselves Indigenous. As several scholars of contemporary Indigenous groups point out, it is futile to try and tease out which things are “Indigenous” and which things are “European” because that is not how people understand their practices or what gives them meaning (Abercrombie as cited in Canessa 2012). As Andrew Canessa (2012, 65) states, “Indigenous authenticity is not to be found in ‘proving’ historical continuities.” Rather, we can examine the various elements of what constitutes the daily livelihoods of people who self-identify as Aymara and trace out the dynamic histories of practices as they emerged and shifted.

Although many Aymara now live in the cities of La Paz and El Alto, making a living from a variety of modern economic pursuits, construction workers, clothing manufacturers, transport workers, vendors of all variety of goods, and politicians, they come from a long tradition of farmers, pastoralists, and

fisherfolk and continue to have ties to their rural communities. Today, in places like the Taraco Peninsula, many Aymara families continue these practices, producing food for their own households, for extended family in the city, and, in the case of surplus, for sale in local and city markets. Thus, the farming, herding, and fishing practices still carried out each day on the peninsula are particular to this region and contribute to their identities as Indigenous and Aymara. As will be discussed, many of these practices have origins deep in the past; others are more recent.

One aim of this book is to contribute to the literature of contemporary Indigenous livelihoods in the Lake Titicaca Basin and bring to a broader audience the vistas, stories, and histories of the remarkable place and communities of people on the Taraco Peninsula. As Keith Basso (1996) encouraged anthropologists to do in his book on Apache landscapes, *Wisdom Sits in Places*, I aim to evoke a sense of being on the Taraco Peninsula “by presenting a host of local details and taking note of their own and others’ reactions to them.” I do so with the recognition of my own positionality as a white, non-Indigenous woman from the United States who has had the immense *privilege* to have the opportunity and permission to live and learn from these generous communities and individuals. This has allowed me to study and bring to bear the experience and deep knowledge of the current Taraco residents to my investigations into the past lives of people on the Taraco Peninsula, particularly with regard to farming.

The Indigenous farming systems of the Andes are widely recognized as repositories of traditional ecological knowledge (Altieri 2004; Altieri and Koohafkan 2004) and have been identified by the Food and Agriculture Organization of the United Nations as a “Globally Important Agricultural Heritage System (GIAHS)” (FAO 2011). As I will argue further below, studying and documenting these current systems is of value in and of itself, but this knowledge can also help us better understand the past (P. Anderson 1999; Baleé 1994; Denevan 2001; Ford 1994). I am not assuming or suggesting that the modern Taraco inhabitants are frozen in time and present perfect analogies for the interpretation of past agricultural practices. Rather, my goal is to observe and record the material manifestations of farming, particularly in plant remains, by Indigenous experts on the Taraco Peninsula. I can then compare material patterns from the present and past to identify potential similarities, possible continuities, as well as differences and divergences (Hildebrand 2003; Stahl 1993; Wylie 2002). Together, the ethnographic and archaeological information can be used to provide a deeper and richer long-term history of agricultural landscapes on the Taraco Peninsula.

Finally, I hope that the details presented here of Indigenous agriculture on the Taraco Peninsula across multiple generations can serve as a model for the future. Many aspects of this subsistence farming lifestyle are transforming and will continue to do so. Opportunities for Indigenous people in Bolivia changed significantly in the early 2000s when Evo Morales, an Aymara man who came from a rural village like those I describe here, became Bolivia's first Indigenous president. This opened new opportunities in government, business, and other sectors that were difficult to access previously. Staying "out on the farm" appears to be less desirable by the younger generations, who have a new range of opportunities in urban settings across South America. Of the two Taraco families I lived and spent most time with, *none* of their children have taken up adult residence on the peninsula. Most live in El Alto working various jobs such as police officers, vendors, seamstresses, and minibus drivers, and several of the other children have migrated to Peru, Argentina, and Brazil to work. The adult children return to their family homes to help their aging parents with a variety of tasks, especially agricultural work. This transition away from farming and into more industrial and technologically "developed" economies not only presents challenges for the continuation of unique and important Taraco lifeways but also has global implications in terms of food production, greenhouse gas emissions, and other issues related to the current state of Earth's changing climate. It is not my intention here to suggest that my host sisters and brothers, and their children, live as their parents and grandparents did. Instead, I ask, what if we *all* placed greater value on those lifeways, learned from them, and worked toward maintaining the beneficial aspects of them? What might those of us living in urban, nonproducer, non-Indigenous contexts learn from this example of what Anna Tsing (2017) would describe as "resurgent" communities who have developed viable ways of living through interactions with many nonhuman actors in their surroundings?

While this book highlights how various aspects of Taraco livelihoods have changed dramatically since people began living here permanently about 3,000 years ago, it also illuminates what has persisted. Despite many profound shifts in climate, economy, society, and politics, this examination of Taraco livelihoods reveals some practices, particularly engagements with plants, that have endured over very long periods of time. A large part of what has made these communities successful for millennia has been their ability to adapt, resist, and rebound by building relationships and generational knowledge of this place through agriculture. I argue that the long-term history of Indigenous landscape creation through farming on the Taraco Peninsula is an important example of sustainability.

DEFINING SUSTAINABILITY

Sustainability is something of a “buzzword” that, in the twenty-first century, signals human efforts (or at least the appearance of efforts) to behave, develop, produce, and grow economies in a way that minimizes harm to other entities on Earth and that enables future generations to persist and thrive. This concept emerged out of the late twentieth-century environmental movement as concerns grew over land degradation, air and water pollution, accelerated species extinctions, and human-induced global warming associated with industrialization, modernization, and neoliberal economies spreading across the globe. In 1987 the United Nation’s World Commission on Environment and Development codified the term in relation to economic development in the Brundtland report, *Our Common Future*, stating: “Humanity has the ability to make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs” (UN Secretary-General and WCED 1987, 16). The term has now been used in a wide variety of contexts, in and outside of development, and is not without criticism (Brightman and Lewis 2017; Murphy and McDonagh 2016).

Here I employ the concept of “sustainability” on two levels. First, in a broad sense, which has been expanded upon by anthropologists and other social scientists, to represent “the connective tissue between ideas of responsibility, rationality, value, and ethics, all embedded in the broader concerns for the future of the world in which we live” (Murphy and McDonagh 2016, xvii). An anthropological approach to sustainability aims to highlight lifeways that provide potential solutions to our current crises of resource depletion and global warming (Brightman and Lewis 2017; H. L. Moore 2017; Pikirayi 2019). It works toward futures that value and support multiple ways of living in the world: “Sustainability . . . might be best understood as the process of facilitating conditions for change by building and supporting diversity—ontological, biological, economic and political diversity” (Brightman and Lewis 2017, 2). A broader (and more ambitious) goal of this book is to elevate the lifeways of Indigenous Taraco residents as an example of how people outside of this specific region might find greater balance and productivity within their places (Altaweel 2008; Denevan 1995; Fisher 2020; Guttman-Bond 2010; Turner et al. 2020). The ways in which they do this are fundamentally connected to their knowledge of and relationships with the nonhuman entities that they share the world with, particularly through their daily activities of farming, herding, and fishing. Anthropologist Anna Tsing (2017, 51) argues that “meaningful sustainability requires multispecies resurgence, that is, the remaking of livable

landscapes through the actions of many organisms.” As this book will highlight, Taraco farmers are a model for such actions.

Second, in a narrower sense, I examine the idea of “sustainable agriculture.” Definitions of sustainable agriculture are often contrasted to modern, industrialized food systems that emphasize high inputs, technology, and monocultures that are rooted in the Green Revolution (Altieri 2004; Gold 2007; Netting 1993). Although these systems have been able to increase overall food production, they have had detrimental consequences to the environment as well as human communities. Definitions of sustainable agriculture from the agronomic and development sectors mimic those of the Bruntland Commission that aim to “balance economic profitability, social equity, and environmental health” (Hand 2016, 10); this could include restoring soils and watersheds, producing in a way that maintains profitability, and better supporting a community (Mason 2003). Fisher (2020, 396), who examines how archaeology can contribute to sustainable agriculture, employs the definition from the Food and Agricultural Organization of the United Nations: “the production of food and other agricultural products, like fiber and fuel, in ways that ensure that future generations will be able to continue to do so and, simultaneously, conserve and, ideally, enhance the environment.” Through the course of this book, I detail the elements that created and continue to contribute to the productive, flexible, and enduring food production system on the Taraco Peninsula.

At the heart of understanding sustainability and what it looks like is an inquiry into how humans live in the world and their relationships with their environs and other nonhuman inhabitants and entities. The study of human-environmental interactions is in many ways a peculiar one to Western thinking and science, viewing ourselves (humans) as something distinctive from everything else on earth (environment) (Bateson 1972; Descola 1994). As a result, Western scholars have come up with a variety of ways to think about and understand these relationships, today and in the past (including the concept of “sustainability” itself). To move away from that dichotomy, I take a landscape approach to these human-environmental interactions, for I believe it can help us define and understand sustainability in its multiple dimensions.

DEFINING LANDSCAPES

Much like sustainability, landscape is a useful, although at times, unwieldy concept (Tilley 1994, 37). The term *landscape* has developed and been employed by several disciplines, including art, but particularly geography and anthropology (Jackson 1984). Although the landscape concept itself has shifted “to

and fro along a natural-cultural continuum” (Knapp and Ashmore 1999, 6), the most fruitful and useful conceptualizations of it have served to collapse the nature-culture dichotomy to better understand humans as part of environments in both evolutionary and historical senses. It is not my aim here to review all of the definitions of landscape (see Anshuetz, Wilshusen, and Scheick 2001; Balée 1998; Falconer and Redman 2009; Gosden and Head 1994; Hirsch 1995; Knapp and Ashmore 1999); rather, I consider five aspects of the landscape concept that make it useful for an archaeologist interested in studying past agricultural systems. Landscapes are material, historical, lived and grown, social and political, and meaningful. These elements of agricultural landscapes, in particular, not only facilitate investigation into the dynamics of present and past farming systems but also provide important insights into the daily lives of the people, places, and entities that bring them to life.

MATERIAL

The first essential element of landscapes is that they are material: they are tangible, physical entities that can be observed at a variety of scales and times (Sauer 1925). One of the most cited definitions of landscape by the archaeologist and historical ecologist Carole Crumley (1994, 6) is “the material manifestation of the relation between humans and the environment.” Landscapes are composed of almost an infinite number of physical elements that a researcher could examine, each of which tells a story about a particular moment in place and time. For this reason, scholars have often characterized landscapes as texts, things that can be read and interpreted (Bellentani 2016). The description at the start of this chapter was my depiction of a Taraco landscape at a particular moment in space and time. It highlighted many elements that can be experienced in the Taraco landscape, including the topography, soils, water, plants, animals, humans, as well as built features and activities taking place in this area.

Archaeologists have long looked for patterns in the landscape to “reconstruct” or access subsistence practices (Denevan 2001; Erickson 2006; Knapp and Ashmore 1999). In this study, I focus on several material aspects of landscape as they relate to agriculture. I consider nonorganic elements of the Earth, such as topography, soils, and water. I do this primarily through the study of soil types, lake levels, and settlement patterns as well as remnants of ancient field systems. I examine in even greater detail nonhuman organic elements, including animals but particularly plants. Zooarchaeological studies provide insights into the role of animals, especially domesticated camelids. My own research is archaeobotanical and focuses on patterns in plant remains, such as

wood, tuber remains, and seeds. I also consider features and artifacts such as agricultural fields, tools, and vessels. Taken together, this assemblage of material remains provides surprising insights into many aspects of past agricultural landscapes. Of course, each element interacts with the others, and it can be difficult to separate them at times, but I attempt to “zoom in” on certain elements to understand their specific roles in the whole landscape.

The materials that constitute landscapes can be viewed from many scales. If we examine the peninsula from a satellite in space through Google Earth, we might note the patterns of fields across the peninsula, the location of houses, and the height of the lake. If we zoomed in to a particular plot of land and took a soil sample, we could observe the size of the particles that make up the soil and test its attributes, such as levels of pH and organic matter. In the field we could examine actions of organisms like plants and insects that, at once, can threaten or support a growing potato. The materials of landscapes vary depending on not only *where* you observe them but also *when*. The description at the start of the chapter takes place during the rainy season when plentiful moisture makes the peninsula green and bloom with colorful flowers. Just a few months later, the rains disappear and are replaced with clear skies and colder temperatures. The crops are all harvested, and the remaining vegetation on the peninsula becomes a yellowish brown. Across the chapters, I take care to note the different spatial and temporal scales that create Taraco agricultural landscapes. Time is particularly relevant and is the focus of the next aspect of landscape to consider.

HISTORICAL

Landscapes are historical. As Tim Ingold (2011, 189) has stated, “Landscape is constituted as an enduring record of . . . the lives and works of past generations who have dwelt within it, and in so doing, have left there something of themselves.” Although some features of a landscape are products of the current moment—for example, the weeds growing in Alejandra’s field that need to be removed for her crop to grow—aspects of them are the result of past activities. The weeds were growing in the potato field because generations of farmers have been tilling this land, making it hospitable to species that thrive in disturbed soils. Furthermore, the now ubiquitous, yellow-flowered plant *ñustasa*³ arrived in the region when Spanish colonists brought over their crops and animals. While an examination of landscape can reveal elements that endure or persist, most elements undergo change through time. As Turner and colleagues (2020, 589) note, “Landscapes must change. It is one of

their fundamental characteristics, experienced every day at scales from diurnal rhythms, through the revolution of the seasons, to the passage of life and death.” Elements on the landscape also change at different rates or tempos, contributing to the complex dynamics of these places at any given moment (Braudel 2023; de Certeau 1984; Gell 1992; Ingold 2011; Lucas 2005).

For the nonorganic elements examined here, processes of climate play a critical role in shaping the character of the landscape. The high, dry *altiplano* and high, abundant lake that we experience today is the result of geological and climatological processes that unfolded over very long time scales, hundreds of thousands of years, and even changes that have occurred over the relatively shorter 3,000-year period considered here. Geological and paleoclimatic datasets provide insights into the characteristics of the local region over this long span of time, especially highlighting its changes (Dincauze 2000; Rosen 2007). As will be elaborated, I quickly learned from the Taraco farmers that variations in rainfall and temperature experienced across the seasons fundamentally shape the nature and timing of agricultural work. This seasonal organization of daily life and its associated tasks seemed so important that I have chosen to organize the vignettes that begin each chapter by the seasons and activities of the agricultural calendar. So while I will consider how farming changed over generations of farmers, I will also consider what yearly and seasonal practices would have adjusted across these periods.

Plants and nonhuman animals also have their own rhythms and paces at which they change, develop, and interact with humans, particularly in the context of agriculture. As with the “nature-culture” dichotomy mentioned earlier, there have been great debates within anthropology and archaeology about whether the dynamics between humans and the environment through time are more evolutionary—shaped by biological processes such as natural selection (Boyd and Richerson 1988; Broughton and O’Connell 1999; Laland and O’Brien 2010)—or historical—shaped by human processes such as migration or trade (Balée 1998; Hodder and Hutson 2003; Ingold 2011). Landscapes, however, are fundamentally the outcome of both evolution and history, especially if we focus, as I do here, on plants. On one hand, humans intervened in the evolutionary process of natural selection by selecting for and promoting certain traits within plant and animal species, at first creating new domesticated species but then continuing to develop distinctive varieties (Rindos 1984; B. D. Smith et al. 2015). When certain species—maize, for example—were introduced to the region, experimentation was required to figure out the best way to grow this tropical crop in this cold, dry environment; thus, farmers eventually developed a variety of maize that grows and matures relatively

quickly. As a result, the plant itself and the cob are quite small. It is nearly impossible, and I would say fruitless, to attempt to disentangle the historical from the evolutionary in this case as it is a product of both. Also, many of the “unintended consequences” of human behaviors, such as clearing land for fields, produce changes in the patterns of wild plant species. Some of these species flourish and other perish in the face of human disturbances (E. Anderson 1952; Bruno 2009). The life cycles and long-term patterns of both domesticated and wild species, and their responses, some might say their agency, to human activities are a central theme in this case study of multispecies resurgence (Hallam and Ingold 2016; Kimmerer 2013; McEwan 2022).

Although evolutionary processes such as climate change, natural selection, and gene flow contribute to the character of Taraco landscapes at any given time, I am most interested here in how such dynamics are experienced and acted upon by the human communities on the peninsula. For this reason, I do prioritize the term “history” regarding the temporal and interspecies dynamics of what is being read from the landscape. This leads to another key element of how landscapes can be defined and understood: they are not simply backdrops upon which humans act but are lived and experienced, constantly in a state of creation (Anshuetz, Wilshusen, and Scheick 2001, 158).

LIVED AND GROWN

Landscapes are the ongoing creation of human and nonhuman actors. Crumley and others use the term “interaction” to describe the nature of these connections between nonhuman and human elements of landscape (Heckler 2009, 11). Interaction, however, can suggest some passivity or simply responses to a stimulus when, in reality, humans and nonhumans are actively engaging with, moving through, experiencing, and impacting each other on a daily basis. A term from phenomenology commonly invoked to describe this active engagement is to “dwell” (Heidegger 1971). Ingold’s (2011, 193) definition of landscape emphasizes this attribute: “the world as it is known to those that *dwell* therein, who inhabit its places and journey along the paths connecting them.”

The notion of dwelling highlights the activities that create a landscape or, as Basso (1996, 143), referencing Albert Camus emphasizes, a *place* is something people *do*. Dwelling connects again with the first tenet that landscapes are material, they are created and experienced daily through tactile activities. This relates to social theories of practice, which understand cultural dispositions as those tangible things that are learned and lived through regular action, both habitual and purposeful (Barrett 1994; Bourdieu 1977; Giddens 1979; Pauketat

2001; Robb 2007). Thus, as Andrew Roddick (2013, 289) notes, dwelling “re-embeds particular technical practices into a wider lived landscape.” The array of activities, or tasks, that take place across a landscape is what Ingold has termed a *taskscape*: “Just as the landscape is an array of related features, so—by analogy—the taskscape is an array of related activities” (Ingold 2011, 195). The taskscape framework has been used by archaeologists to examine a wide range of past activities (Rajala and Mills 2017; Roddick 2013; Walker 2012). There are many activities that have taken place and continue to do so across the Taraco landscape: fishing, herding, hunting, potting, building, organizing, worshipping, celebrating, and mourning. I build on Andrew Roddick’s (2013) first steps to “develop an ‘archaeology of inhabitation’ for the Lake Titicaca basin.” His work focused on embedding the technical practice of pottery production in the landscape, including links to agricultural practices. Here I elaborate on those. Agriculture involves a myriad of technical practices: preparing the soil, planting, tending, harvesting, processing, and, of course, cooking and eating (Walker 2011). These agricultural tasks were my main entryway into learning about Taraco farmers, as much of my ethnographic fieldwork was spent as a helper to the Quispe family and others who allowed me to accompany them. Furthermore, in the 74 interviews about the agricultural cycle that I conducted across four Taraco communities, Chiripa, San José, Santa Rosa, and Coa Collu, I quickly discovered that the farmers consistently described their agricultural year by talking me through the tasks that marked each season. For this reason, the opening vignettes also highlight these practices. Examining these particular agricultural activities and their material manifestations not only help us understand patterns present on the landscape today but provide an avenue for seeing and tracking them in the past.

Ingold (2011, 77, 86) argues that landscapes, particularly those inhabited by agriculturalists and pastoralists, are “grown” rather than made. Farming is not a mastery of humans over nature but a change in relationships. Take into consideration the abundance of potatoes and other tubers that grow on the Taraco Peninsula and across the Andes today. In the process of domestication, humans selected for traits in wild potatoes that made them more edible, such as less toxicity and larger tubers (Grun 1990; Hawkes 1990; Johns 1989). These traits, however, also made them more susceptible to damage by other organisms, such as nematodes, and environmental conditions, such as frosts, so it required humans to create specific conditions in which these new species could survive and flourish. This was brought to life for me one day when Alejandra declared, “*Bien he hecho papa*” or “I’ve done a good job making potatoes” after we had completed an afternoon of pulling weeds, piling up dirt around the base of

the growing potato plants, and fixing the furrows running between each row. This whole process is called *th'aruña* in Aymara. This activity loosens the soil around the tubers so they have more space to grow and ensures that water reaches them without inundating them. Although we were months away from harvesting and seeing the final product of these efforts, Alejandra expressed how the work that goes into helping them grow is what makes a good potato. Therefore, an understanding of landscapes as places that are lived and grown can help us move from the patterns in lake levels, soil types, or plant species to how such activities would have shaped people's everyday experiences and understandings of their world. As Barrett (1994, 5) explains, a landscape approach moves us toward "an understanding of what the possibilities were of being human within those historical and material conditions."

While I examine tasks on their own terms and what they can reveal about past agricultural activities, they connect in important ways to other aspects of past Taraco livelihoods. These tasks were carried out in and upon social and political units, from members of a household harvesting their own field of potatoes to hundreds of people feasting on foods brought in from across the community. These interpersonal dynamics create another critical layer of understanding agricultural landscapes.

SOCIAL AND POLITICAL

Landscapes are social and political. As Don Mitchell (1996, 33) observes, "Landscape structures social reality; it represents our relationships to the land and to social formations." The creation of agricultural landscapes is shaped by the social and political contexts in which they are embedded, as they are the direct result of people's labor. A plentiful harvest is as much the result of successful coordination of the human actors as it is the cooperation from the weather, soil, pests, plants, and animals. The relationships between agriculture and changes and characteristics of human social and political organization have long been a topic of anthropological interest (Graeber and Wengrow 2021; Wittfogel 1957). Around the world many (but not all) human communities that became dependent on domesticated plants and animals also saw transitions to more sedentary lives, larger population sizes, and increasingly complex ways of organizing and interacting with each other. Much debate has ensued about the causal relationships between social-political complexity and food production systems—which came first? Was there one driving force such as climate change, population pressure, coevolutionary entanglements, optimizing or aggrandizing human behaviors (M. N. Cohen 1977; Flannery 1969; Hayden 1990; Johnson

and Earle 2000; Wittfogel 1956)? It is tempting to look at the final outcomes of hundreds of years of human-environmental interactions and tease out if there was a single factor driving the changes we observe, but a landscape approach moves us away from monocausal outcomes and shifts our focus to the practices and processes that produced changes in both agriculture and sociopolitical organization (Barrett 1994; Heckler 2009; Hirsch 1995; Robb 2007).

As John Robb (2007, 7) points out, “Social reality . . . is continuously generated through individual action—through ordinary actions whose proximate aim is to accomplish some specific task at hand.” From the taskscape perspective, we can examine who is/was participating in agricultural activities and how they are/were organized at different scales (Gamble 1999; Roddick 2013; Walker 2011). We can also consider the products of those activities, particularly food, and examine how it was consumed, shared, and redistributed inside and outside the household (Appadurai 1981; Hastorf 2016; Logan 2020; Weismantel 1998). These considerations illuminate important dynamics and distinctions of social life such as age, gender, and status. The opening scene of this chapter highlights just a few that exist on the peninsula today: young and middle-aged men fishing, middle-aged and elderly women cooking and carrying out field maintenance, teenaged children tending to animals. Some of these tasks can be done alone, such as weeding or putting out grass/lake reeds for animals to eat. Big jobs such as planting not only require more than one person but get accomplished much more rapidly with many helping hands. While household units are usually the basis of these group efforts, they often involve additional neighbors and even relatives or friends from out of town and other communities. These are communal activities that not only accomplish an agricultural task but re-create and shape the social landscapes of Taraco life.

Many scholars have examined how power dynamics are inscribed onto physical spaces, molding how a place looks and feels and how individuals move through and experience it for generations (A. M. Bauer and Johansen 2011; A. M. Bauer and Kosiba 2016; Hu 2022; Jennings and Swenson 2018; Knapp and Ashmore 1999; A. T. Smith 2003; S. C. Smith 2016). There are political structures that influence who can do what; for example, there are quite strong rules around gendered activities. One of the most visible and dynamic elements of power that shape agricultural landscapes is where farming takes place. Farming requires space that is dedicated to the raising of plants and animals, and the regulations and negotiations of who plants and raises where is a fundamental political component of the landscape (Erickson 2000; Hastorf 2009; Kosiba 2018; Morrison 1995). For example, the layout of homes and fields today is not based on the optimal placement for productivity

but rather a reflection of how land was divided up among families after the Bolivian Revolution in 1952 and the Agrarian Reform of 1953 (Klein 1993; Soriano 2017). As will be elaborated, access to the range of soil types is certainly part of the calculus of when and where to plant, as well as when and how long to fallow a field. Yet, as I learned in my interviews, for some families the length of fallow periods is not necessarily determined by the time the soil needs to recover but how much land they have available to cultivate. While some families have enough land to leave fields fallow for up to 20 years, some have so little they can only afford fallows of one or two years. This was a result of a political decision made over 60 years ago and how the land subsequently got divided up among siblings.

Where and to what scale agricultural tasks take place thus links us to the broader political landscape that is both shaped and created out of these practices and others. Considering the dynamics of agricultural production as well as food practices will shed light on the ways in which farming articulated with changes in sociopolitical structures across the Formative and Tiwanaku periods. I consider how agriculture articulated with the built environment (the location of fields, homes, monuments) and larger-scale, extra-household community gatherings and rituals. These, in turn, created new and different demands of the food production systems. Archaeologists in the region have long been interested in such political elements of the Titicaca Basin agricultural landscape, especially when it comes to one of its most unique features, raised fields, a topic that I will also address.

MEANINGFUL

Entering through the materiality of agriculture, we can engage in the physical relationships that created a productive place in which generations of farmers could sustain themselves. Through these material practices we can also engage with some of the meaningful elements that are also part of landscapes. Keith Basso (1996, 109–10), describing Apache landscapes in Arizona, notes, “Represented and enacted—daily, monthly, seasonally, annually—places and their meanings are continually woven into the fabric of social life, anchoring it to features of the landscape and blanketing it with layers of significance that few can fail to appreciate.” Thus, as tasks are carried out together, lessons are taught, not just about productivity but also life. These lessons are inscribed on these places.

This aspect of landscape allows us to engage with the idea of sustainability not just in an environmental sense but as a social one as well. The meaningful

aspects of landscape often contain recipes for what a society believes is required to succeed and reproduce within their surroundings. According to Descola (1994, 3), “It is on this one condition that we can show how the social practice of nature hinges at one and the same time on the idea a society has of itself, the idea it has of its material environment, and the idea it has of intervention in that environment.” While it is not possible to access all meanings of the landscape from past people, the material manifestations of how Taraco residents have interacted with the elements of soil, lake, animals, plants, and each other over generations reveals attitudes toward their relationships with the world and the ways in which they have been able to sustain their communities with both change and persistence.

EXPLORING TARACO AGRICULTURAL LANDSCAPES

I begin this exploration into the long-term development of Taraco agricultural landscapes, in chapter 2, with an overview of the cultural and political history of the peninsula’s Indigenous communities beginning approximately 3,000 years ago. While I discuss the entire span of time up to the present, I elaborate on the early time periods that are the focus of my study: the Early Formative, Middle Formative, Late Formative, and Tiwanaku periods. I discuss major patterns in settlement, material culture, architecture, and sociopolitical dynamics based on data gathered from an archaeological survey and excavation at four sites by the Taraco Archaeological Project. In this overview I highlight the spatial characteristics of human settlements on the peninsula, including homes, community centers, and lands for farming and other productive activities. This also allows for an examination of how human interactions changed on the landscape as populations grew and new social and political dynamics emerged both on the peninsula and across the southern Lake Titicaca Basin. This framework sets the stage for discussing the elements of Taraco agricultural landscapes through time and space in the following chapters. While the chronological framework presented here is important for initiating this story, subsequent chapters will explore how different elements of the landscape have different temporalities, some of which correspond to social and political changes while others do not. This eventually requires a rethinking of some common narratives about the trajectory of human development in the Lake Titicaca Basin.

In chapter 3 I start with the initiation of the agricultural year when Taraco farmers begin to prepare their fields at the end of the dry season. I explore several inorganic elements of the Taraco Peninsula: topography, soil types, rainfall,

and lake levels, and how their spatial and temporal variation influence agricultural landscapes. I consider how modern-day farmers plan the timing and distribution of their yearly agricultural activities in relation to these patterns. This informs a discussion about the character of Formative and Tiwanaku period land use for farming and herding and how inhabitants may have dealt with documented periods of lesser and greater rainfall by moving their activities across the landscape. This leads to an examination of raised fields, a technology that became particularly important during the Tiwanaku period and that developed, I will argue, out of Formative period farmers' experiences with shifting lake levels and soil manipulation.

Chapter 4 is the first of several chapters that highlight my primary source of information on Taraco landscapes: plants. This chapter begins with the planting of the annual harvest and an introduction to the domesticated plant species that contribute to the agricultural history of the area. While there are many species to consider, the primary actors visible in the archaeological record are chenopods (quinoa and *kañarwa*) and tubers (potato and *oca*) as well as an introduced species, maize. I examine the broad trends in these species through the major Formative and Tiwanaku periods across four sites on the peninsula: Chiripa, Kala Uyuni, Sonaji, and Kumi Kipa. The history of these crop-actors is one of striking continuity, particularly in the cultivation of quinoa and tubers. There is also a trend of increasing crop diversity through time.

In chapter 5 we enter the rainy season and the work required to help crops grow. This involves an examination of the many noncrop species that dominate the archaeological plant record and that would have been important actors in shaping past landscapes. These plant species are responsive to human activities, including farming. Their changes through time indicate shifts in land use and other practices associated with smallholder agricultural intensification, particularly an increase in tilling the soil. Although many of these species might be considered "unwanted," as they present competition for crops, residents of the peninsula today also have many other uses for them, especially as animal fodder. The archaeobotanical evidence illustrates that these plants nourished past domesticated animal herds; thus, the patterns in these noncrop plant species also shed light on the pastoral elements of Taraco's ancient landscapes.

Chapter 6 begins to narrow the spatial and temporal scale of this study as I focus in on the processes and practices by which crops were transformed into food. This chapter begins with the harvest of the yearly crop and the processing required to store plants for future use. To consider such practices in the past, I look in greater detail at the plant remains from the site of Kala Uyuni. First, I introduce the archaeological evidence for how this community was

established and transformed across each time period considered in this study. I then examine patterns in the density, diversity, and distribution of carbonized plant remains in different types of contexts, from living floors to garbage pits. These patterns reveal where plant-related activities, which were preserved through fire, took place. I focus specifically on evidence for the processing of crops, particularly quinoa, across time and space at Kala Uyuni.

In chapter 7 I turn to the transformation of plants and animals into meals at Kala Uyuni. The introductory vignette highlights the structure of daily and special-occasion meals prepared on the peninsula today. I then reconsider the list of archaeological plant and animal species as ingredients in meals taking on the roles of starches, proteins, relishes, and spices. Examination of specific contexts of food preparation, consumption, and disposal at different moments of Kala Uyuni's history illuminates patterns in both daily and special-occasion meals through time. Through the politics of food at Kala Uyuni, I consider how this community articulated with the social and political dynamics of the peninsula and the broader southern Lake Titicaca Basin.

In chapter 8 I weave back together the individual landscape elements of soil, water, animals, and plants to present a history of early Indigenous agriculture on the Taraco Peninsula. I synthesize these multiple lines of evidence by describing agricultural taskscape and how they transformed through time. This inquiry prioritizes the patterns seen in plant and animal remains, which reveals continuities and ruptures in human life on the Taraco Peninsula that differ from the traditional cultural history described in chapter 2. This history reveals remarkable continuities in multispecies engagements and agricultural practices that enabled Indigenous communities on the Taraco Peninsula to manage fluctuations in local climate and significant transformations in sociopolitical configurations. This persistence involved not only profound knowledge of the nonhuman components of the landscape but meaningful engagements with them as well. I argue that Indigenous farmers of the Taraco Peninsula provide an important model of "resurgent communities" whose practices allow for human communities to endure in an area for long periods of time without exhausting the organic and nonorganic entities that they depend upon. While we cannot adopt these specific practices, we can look to cultivate those in our local places and support initiatives and policies that protect such livelihoods around the world.