The ARCHAEOLOGY of ANDEAN PASTORALISM

EDITED BY

José M. Capriles & Nicholas Tripcevich

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Foreword

Mark S. Aldenderfer

As archaeologists, we take pride in our ability to recognize change. Therefore, it is especially gratifying for me to write a foreword to this very important review and reassessment of camelid pastoralism in the Andes because I see clear evidence of very positive changes in the ways in which we study it.

Back in 2001 I wrote an overview piece on Andean pastoralism that was published in Larry Kuznar's *Ethnoarchaeology of Andean South America*. I identified four topics that ethnoarchaeologists could investigate in order to help us better understand how Andean pastoral societies changed through time: the domestication process, the "secondary products revolution" seen through an Andean lens, variability in the pastoral mode of production, and social transformations that were part and parcel of the appearance and transformation of pastoral lifeways. At the time, it seemed to me that if we studied these themes we would be able to answer the most critical questions confronting the archaeologists who studied these societies.

Fast forward to this volume. The editors have helpfully identified the themes they see in the contributions (I'm sure you can create a set on your own), and I've taken the liberty of describing them in my own words: the landscapes of Andean pastoralism, the intensification of herding over time, animal-human relationships, and social transformations.

These themes overlap a bit with those I identified in 2001, and it's nice to see aspects of my thinking still having some resonance. But it is also exciting to see how these newer themes track trends in the larger discipline. I see this as one of the strengths of this volume: while the subject matter is certainly Andean-centric, the editors and authors have reached out to other theories and other regions to help place their work in a wider context.

Take landscape, for instance. For years archaeologists have examined the spatial distribution of the sites they have studied, especially within the context of defining environmental variability and how that affects resource acquisition and settlement location. However, the modern landscape approach seeks to "humanize" the environment by recognizing that it is simultaneously a social and cognitive construct. Environments are no longer approached with assumptions about nature versus culture or humans as passive respondents to nature, but instead we consider how we create environments of all kinds. It's easy to see how this enhanced conceptualization of landscape is of real value to the study of pastoral peoples. Pastoralists "see" the environment differently than do foragers even though they may be confronted with similar configurations of resource patches. Although we do not know how ancient Andean foragers "thought" about the wild camelids they hunted, modern ethnography of remaining foraging peoples and new thinking on animal-human relationships, such as ideas developed by Tim Ingold and others, suggest that they thought about them as more than mere "objects" or meat. But camelids have become objects, admittedly complex ones, through domestication.

Domesticated animals can be and are owned, and this transformed relationship is ramified as different modes of pastoral production and intensification appear through time. But relationships between humans and animals are complex, and the theme of how domesticated camelids

become central to ritual performance and religious belief is explored by a number of papers in the volume. It is easy to think of how, say, an animal "offering" to the hunter becomes transformed into a human offering of the animal. Both the human and animal have agency in both contexts, but their roles are reversed. Animals become a provider of human sustenance in a different manner, and their provisioning is recognized in a different manner—via sacrifice. But unlike the hunted animal, which is consumed by people, the sacrificed animal is not. This transformation shows just how profound the transition to pastoral life was in the Andes, for both animals and humans.

Thinking through a humanized landscape also helps to place the social transformations that accompanied the advent of pastoralism. Human-human relationships were profoundly affected at the level of the individual, the family unit, more inclusive social entities such as moieties or ayllus, as well as villages and whole regions. Of course this did not happen all at once. As the intensification of herding societies progressed, the pace and scope of social change intensified as well. Perhaps one of the most critical changes that took place was the enhanced ability to accumulate wealth via the control of the camelid "object." But unlike in foraging societies, where accumulation of some good is either difficult or socially stigmatized, the accumulation of animals in a pastoral economy is necessary because of the continued demand for successful animal reproduction to replace losses due to predation, disease, and human consumption. Accumulation, then, is socially sanctioned, and it is likely that this dynamic led to greater tolerance of social inequality. And that's when things really get interesting in the Andean world!

One of the great strengths of this book is to open up the archaeology of Andean pastoralism to the wider world of current anthropological thinking, and the editors are to be heartily congratulated for assembling a stimulating volume that combines reflections on what we know (or think we know) about the domestication process, with forward-thinking chapters that engage extensively with the themes they have chosen to emphasize. I'm certain it will be well received by Andeanists as well as by scholars of pastoral societies worldwide.

Chapter 1

Advances in the Archaeology of Andean Pastoralism

Nicholas Tripcevich and José M. Capriles

The landscape of the highland Andes provides an enduring record of the practices of generations of camelid pastoralists. This record can inform anthropological studies of ancient and modern herders. Mobile herds allowed many puna communities to prosper as their flocks took advantage of the expansive grasslands, generated valuable secondary products, and provided caravan animals for linking dispersed communities, exchanging goods, and sharing information. The cyclic movement of herds and caravans also influenced ethnic borders and crossings as well as the configuration of political structures. The chapters in this volume survey recent research on Andean camelid pastoralism, provide a theoretical framework for further studies, and explore future lines of research. They consider a diverse array of topics, including camelid domestication and the development of specialized forms of animal husbandry, animal sacrifice, and social interaction through llama caravans. More importantly, these works emphasize that identification of the long-term trajectories of Andean pastoralism can make a substantial contribution to the comparative understanding of herding societies around the world.

In this chapter we provide an overview of the archaeological study of pastoralism with an emphasis on camelid herding in the Andes and then consider themes explored in the other chapters of this volume. The book comprises a collection of archaeological studies of Andean pastoralism that examine the topic of pastoralist societies from numerous angles and using different lines of evidence. Emerging from a multi-session event (20 talks) presented in November 2012 during the 111th Annual Meeting of the American Anthropological Association in San Francisco, this work aims to build on and contribute to the literature on the anthropological study of Andean pastoralism (Bonavia 2008; Browman 1974; Flannery et al. 1989; Flores Ochoa 1979; Kuznar 2001; Mengoni Goñalons and Yacobaccio 2006; Núñez and Dillehay 1995; Núñez and Nielsen 2011; Wheeler 1995).

PASTORALISM AND HERDING SOCIETIES

The origin, spread, and evolution of pastoralist societies is a fundamental anthropological inquiry that is directly related to understanding cultural change, human-environment interactions, social complexity, and ecological adaptations. Pastoralism is a general form of economic subsistence that is fundamentally (but not exclusively) based on the management, production, and consumption of herding animals (see Barfield 1993; Capriles 2014; Chang and Koster 1986; Cribb 1991; Dyson-Hudson and Dyson-Hudson 1980; Ingold 1980; Khazanov 1994; Marshall and Capriles 2014; Wendrich and Barnard 2008). In addition, pastoralism can be conceived of as an environmental adaptation and risk management strategy that upholds the productivity and safety of the herding animals as commensurate with the stability and security of the human community. Therefore, pastoralism is more than an economic activity and involves ecological, social, political, and ideological elements. Often complemented

by cultivation, exchange, and sometimes hunting and gathering, the primary activity of pastoralist societies is raising and managing their herds.

Herds or herding animals are domesticated animal species that can be kept in large groups, generally have medium-to-large body sizes (over 20 kg), usually have a dominance hierarchy, and are managed by their human herders to produce direct, indirect, primary, and secondary products (Marshall and Capriles 2014). Sheep, goats, and cattle are good examples of domesticated herding animals, as are yaks, horses, donkeys, and dromedary and Bactrian camels. In the Andes the domesticated camelids, llamas and alpacas, were the center of herding societies, but since the Spanish conquest, Andean herders have adopted a number of Old World domesticates such as sheep, cattle, and donkeys. Pastoralist societies often employ diverse types of herding animals, including various species, numbers of animals, sizes, ages, and sexes. Herd size can vary from a few animals to several thousand. The composition of a herd in terms of species, breed, age, and sex is often conditioned by factors such as wealth, seasonality, idiosyncratic preferences, and access to pastures, human labor, and markets.

Pastoralists are the beneficiaries of animal products and services that result from the feeding herds transforming cellulose, which is indigestible by humans, into energy. The resulting products consumed by humans include meat, fat, marrow, blood, and milk. Herds also provide secondary products and services that include milk byproducts, transportation and draft, dung for fuel and fertilizer, fiber, hides, and raw material from bones and horns (Chang and Koster 1986; Sherratt 1983). The primary responsibility of the herders is to protect the herd from predators, pests, and rustlers, and to ensure the animals have adequate access to grazing land and water (Dyson-Hudson and Dyson-Hudson 1980; Flannery et al. 1989). Access to feeding grounds is generally achieved through landscape management and cycles of mobility of varying length depending on several factors such as seasonality, climate, and local flora as well as the enforcement of some form of property rights to pastures (Frachetti 2008, 2012; Fratkin 1997; Khazanov 1994; Salzman 2004).

DOMESTICATION OF CAMELID HERDS

The earliest evidence of a pastoral lifeway in the Andes spans a long period between the early and late Holocene (ca. 8000–3000 BCE). Traditional interpretations suggested that hunter-gatherers who specialized in hunting wild camelids eventually adopted camelid pastoralism during this time (Bonavia 2008; Kent 1987; Tomka 1992; Wheeler et al. 1976; Wing 1978). The first archaeologically derived models for explaining camelid domestication developed from investigations in caves and rock shelters in the Peruvian central highlands (Moore 1989; Rick and Moore 1999; Wheeler 1984, 1985). At the same time, these studies also addressed the methodological problems associated with identifying correlates for domestication in the archaeological record, such as interspecific osteological differentiation.

Based on the integration of a large dataset of faunal identifications from a wide array of archaeological sites, Wing (1978, 1986) proposed a synthetic model for the domestication of camelids. This model proposed that hunting of wild camelids occurred mostly in the puna and in some highland valleys of the central Andes between 10,000 and 5500 BCE, followed by intensive use and the beginnings of camelid breeding control in the puna between 5500 and 2500 BCE. Subsequent camelid pastoralism was inferred by a pattern of continuous camelid use in the puna, their increased use in highland valleys, and their introduction to the coast and eastern and northern Andes (probably due to increased exchange networks) between 2500 and 1750 BCE. Continued herding intensification occurred during the remaining prehispanic period including the development of specialized and improved wool-producing breeds by 500 CE.

In a recent synthesis Mengoni Goñalons and Yacobaccio (2006) provide rich new data produced by a number of long-term research projects carried out in southern Peru, northern Chile, and northwestern Argentina that suggest multiple processes of domestication could have occurred around the same time in regions beyond the Peruvian central highlands (see also Aldenderfer 2006; Cartajena et al. 2007; Mengoni Goñalons 2008).

Molecular research has clarified the phylogenetic relationships among the extant four species (Kadwell et al. 2001; Wheeler et al. 2006). The purported ancestor of the llama (*Lama glama* Linnaeus, 1758) is the sierra guanaco (*Lama guanicoe cacsilensis* Lönnberg, 1913) whereas the purported ancestor of the alpaca (*Vicugna pacos* Linnaeus, 1758) is the northern vicuña (*Vicugna vicugna mensalis* Thomas, 1917), although hybridization among all species is substantial. Furthermore, recent genetic work has identified early divergences within the guanaco

clade supporting the existence of more than one domestication center for the llama as hypothesized by archaeological research (Barreta et al. 2013).

PASTORALISTS AND SOCIAL LIFE

The structure of pastoral production results in recurring political institutions among most pastoralist societies. Competition for rich pastures is linked to pressure to minimize risk by increasing herd size above a threshold; this leads to the appearance of at least one level of political organization (which is traditionally kin-based) for enforcing communal rights to feeding territories and individual (or household) property rights to animal herds and individual animals. Because grazing territory is essential for the reproduction and growth of a herd, disputes among herders are common historically and violence and warfare have been associated with pastoralist societies (e.g., Arkush 2011; Evans-Pritchard 1940). Generally, disputes occur more often among members of the same herding group than they occur between pastoralist groups and groups that practice other types of subsistence economy (Dyson-Hudson and Dyson-Hudson 1980).

Herding animals can be accumulated and they constantly reproduce. They can therefore be used as a measure of exchange, but also as an investment, a symbol of wealth, and a source of incipient capital accumulation. Ownership of herding animals can be transferred horizontally or vertically through gift giving, exchange, and inheritance but also through raiding and rustling. In this sense pastoralism can potentially trigger (or enhance) broader processes of sociopolitical complexity, separately and independently of agricultural societies. In some cases the social investment in herds is connected to ritual and symbolic adoration of the animals, as seen, for example, in the cattle songs, myths, and deities described by Evans-Pritchard (1940) in East Africa.

A consideration of the social dimensions of herding necessarily involves attention to social obligations of the herder to the herd and to the larger community of pastoralists that share access to pasture (Fratkin 1997). The juxtaposition of providing for the family herd animals, frequently a private resource, with managing pasture that falls within community-held lands (the commons) is often negotiated through ritual practices that affirm the broader social contract.

THE HUMAN ECOLOGY OF PASTORALISM

Pastoralism allows human groups to exploit ecological niches such as arid and semiarid grassland environments limited by factors that include poor soils, low water availability, and low or unpredictable rainfall cycles (Marshall et al. 2011). Pastoralism provides an efficient strategy for reducing risk when residing in extensive grasslands and scrublands where intensive and extensive cultivation is either not feasible, less reliable, or would require substantial labor investment. Risk is managed because it allows people to cope with environmental variability by relying on mobile living animals as opposed to spatially bounded annual harvests (Browman 1987, 1997). The risk managing aspect of pastoralism is central to understanding the human occupation of agriculturally marginal regions such as deserts and steppes in antiquity, and it has contemporary relevance with increased aridity and unpredictability resulting from climate change.

Although pastoralists are often viewed as transitory occupants of a given territory, they are also actively involved in transforming and engineering their surrounding landscape. An obvious impact of herders and their herds is the temporary depletion of plant species that are grazed, browsed, and trampled. The spatial and temporal scale of the impact can vary substantially depending on the herding species, density and intensity, and a combination of other ecological factors such as phenology, climate, and soil nutrients. Moreover, by depleting certain plant species, herding has variable impacts on different ecosystems, often determining specific vegetation-succession cycles. In fact, some scholars believe that the disturbance on local plant communities produced by herding promoted the domestication of certain plant species such as quinoa (Kuznar 1995).

In general, the largest infrastructural investments that herders make are to overnight base camps where animals are typically kept in corrals for protection and where butchering and shearing usually occur (Nielsen 2000). Through time, the accumulation of dung in corrals and other features can potentially produce nutrient enhancement because of the soil's enrichment with phosphates, nitrates, and other nutrients (Korstanje 2005). In addition, pastoralist societies can directly modify their landscape by investing in the creation of engineering works such as irrigation canals used to water pastures and broader areas for herding (e.g., Browman 2008; Lane 2009; Lane and Grant, this volume). Pastoralist societies are dynamic and

vary a great deal depending on location, environment, climate, species composition, and interaction with full-time farmers and urban centers, as well as social identity and religious ideology.

PASTORALIST ECONOMY AND MOBILITY

The extensive use of surrounding landscapes in search of feeding grounds and the associated interaction with neighboring groups is a distinctive attribute of the pastoralist lifeway. The variable rate at which herds move through different feeding areas can result in residential relocation movements at seasonal, yearly, decadal, and even longer cycles depending on a combination of environmental and social factors (Cribb 1991:18–20). Typologies have been developed based primarily on herder residential mobility; however, more recent conceptualizations involve a combination of elements of mobile societies such as moment (length of movement), motion (pattern of the movement), motivation (reason for movement), and segment (social groups involved) (Wendrich and Barnard 2008:8–9). In many regions pastoralist communities will participate in a mixed economy by sharing or trading with non-herding groups. This distinction between herding and non-herding can lie within families who may have differential access to arable land and animals, within communities that have agricultural and pastoral sectors, or within larger socioeconomic units that interact to complement different economic resources.

The broad and continuous use of the surrounding landscape promotes social interaction between pastoralists and other socioeconomic groups. The interaction may develop into institutions governing transactions between communities that persist in some form over long time periods. Interaction between herders and farmers involves a long-standing—though sometimes fraught—complementarity that may lie between or within communities (Khazanov 1994; Parsons et al. 2000). In mountainous regions of the world this interaction is commonly encountered between lower-elevation farming groups and grazing communities higher up, with herders typically providing the transportation labor (Guillet 1992). Institutions develop around these relationships that may be centuries or millennia in age and become associated with distinctive cultural traditions, such as colonial outposts in other ecological zones, as has been documented in studies of Andean vertical complementarity (Murra 2002; Van Buren 1993).

CONTRIBUTIONS TO THIS VOLUME

The 14 chapters in this volume cover a wide array of topics including pastoralist landscapes, ritual, human-animal relationships, intensification and environmental change, and climate and resilience (Figure 1.1). Included chapters range from field locations in highland and Sierra mid-altitudes to two archaeological contexts on the Peruvian coast, span the region from southern Bolivia to northern Peru, and comprise the complete temporal range of human presence in the Andes.

Lawrence Kuznar explores the effects of pastoralists on social stability with the goal of developing a generalizable model. The cultural and psychological differences between farmers and herders, for example, have commonalities all over the world. And yet biases in the published record abound, as textual descriptions of "barbaric raiders" often have their origins in pejorative accounts recorded by settled folk (Bernbeck 2008). Kuznar examines the stabilizing or destabilizing role of caravan trade during the Spanish conquest, ultimately arguing that, among other things, caravans provided a stabilizing element.

Katherine Moore provides an overview of the domestication process in the Andes, beginning with a detailed consideration of the geography and behavior of wild camelids and hunting. She approaches the domestication process by looking at evidence coming from range extension, changes in body size, herd mortality, corrals, and the role of fiber. Moore draws insights about range territoriality and domestication from descriptions of wild camelid roundups and her 1981 observations of vicuñas establishing territory following reintroduction in the Junín puna. She foresees a better understanding of the complexities of camelid domestication events in multiple regions emerging from improved metrics as well as isotopic, micromorphological, and genetic studies.

José Capriles provides insights into the Formative Period pastoral economy from the Wankarani cultural complex in Oruro (western Bolivia), focusing on the site of KCH56 and its faunal remains. Zooarchaeological evidence from excavations at this herding site show delayed culling. Three stages of culling emerge from studies of epiphyses and teeth: neonates, subadults (presumably males), and older animals. The evidence points to seasonal use of the site and an economy oriented toward secondary products from camelids.

To gain insight into camelid management, Maria Bruno and Christine Hastorf bring an archaeobotanical

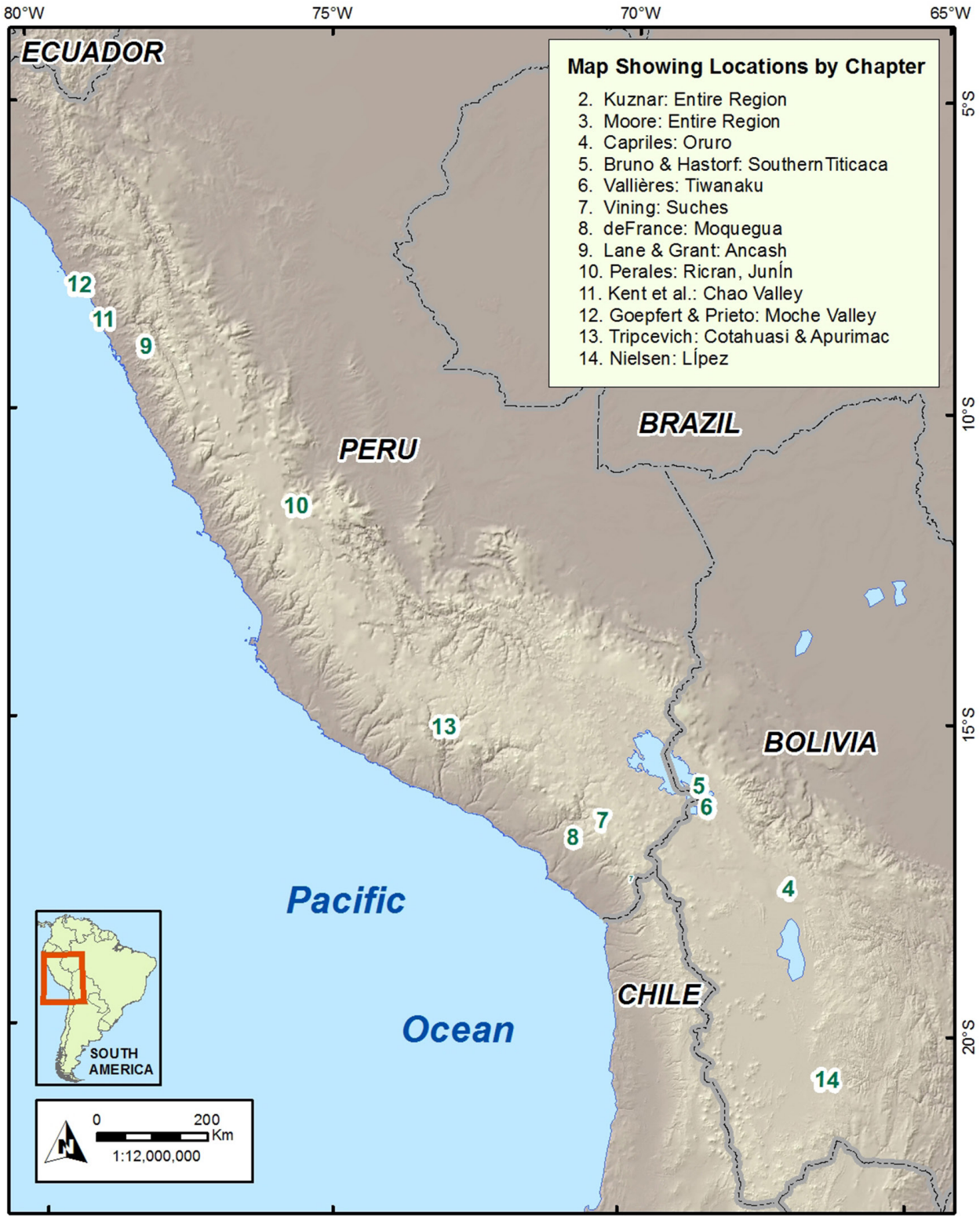

Figure 1.1. Map showing the geographic focus of each chapter. Courtesy Nicholas Tripcevich.

perspective to the study of animal dung used as fuel in the southern Lake Titicaca basin. Seeds identified in samples from hearths dating to Formative Period contexts are linked to vegetation in the surrounding Tiwanaku Valley and the Taraco Peninsula, where the camelids are assumed to have fed. The seeds identified largely confirm expectations about plants in the areas surrounding the sites, although intriguingly the researchers found that Tiwanaku camelids had access to plants from the wet zones to a greater degree than did those on the Taraco Peninsula.

Synthesizing many lines of evidence, Claudine Vallières considers the question of how people in the Tiwanaku urban center, estimated at up to 20,000 people, were provisioned with meat. Following a review of the issues surrounding Tiwanaku population size and food supply, she presents her zooarchaeological evidence of a variable mortality profile from Mollo Kontu domestic contexts and finds many camelids were probably acquired "on the hoof" and processed by the consumer. Vallières concludes that Mollo Kontu residents managed their own camelid herds that were at times pastured at *qochas* within the city proper. A review of osteological evidence for camelid offerings in ritual and public spaces is followed by an exploration of the structure of regional caravans during Tiwanaku. She reviews the production and exchange of secondary products—dung, fiber, and bone tools—and concludes with ideas for future research.

Benjamin Vining examines a shift in the settlement pattern in the Lake Suches basin (southern Peru) from Formative Period small villages to dispersed hamlets in the Middle Horizon, with temporal affiliation based on pottery styles. During the Middle Horizon the dispersed hamlets were found to be located in areas spatially associated with modern *bofedales* using vegetative indices derived from multispectral satellite imagery. Careful management of bofedal grazing areas permitted intensification of fiber production that is interpreted as belonging to a larger effort to commoditize animal wealth in this period. Vining suggests that this fissioning of villages into dispersed hamlets involved indirect costs to the social cohesion and continuity of highland communities.

Susan deFrance offers a sweeping view of historical ecology and camelid use in the Osmore drainage in Moquegua (southern Peru). The Osmore River is an excellent place for the study of human-camelid interaction over the long term given the exceptional preservation and sustained human occupation. Moreover, during the last 25 years Moquegua has been the subject of many archaeological studies that largely complement one another. DeFrance's summary points to the resilience of pastoralism in the face of major social and environmental changes in the region.

Kevin Lane and Jennifer Grant consider evidence of herders expanding the range of pastoral production into lower elevations during the Late Intermediate Period in Ancash (north-central Peru). Evidence of the use of silt dams and other hydraulic controls to improve grazing in the 3,600–3,900 m above sea level band substantially increased the area of available land for pasture by extending it down to the broad highland flanks where vegetative growth is more rapid and largely constrained by water availability. The authors take a political ecology approach and examine these data in light of the modern decline and marginalization of camelid pastoralism. They note that ecological limits are not rigid and moving the herding zone into an area that is potentially agriculturally productive demonstrates the vibrancy of the herding economy at this time.

Manuel Perales's chapter looks at shifts in settlement patterns with the Inka conquest of the upper Ricrán in Junín (central Peru) with a focus on corrals and mortuary features. He describes large corrals attached to distinctive rectangular structures made up of approximately 20 cells that he identifies as ceremonial constructions and interprets as representing a new form of ritual performance and legitimization of power appearing in the Late Horizon. Large pastoral settlements in the Late Intermediate Period are replaced with an economic emphasis on agriculture during the Inka occupation of the area. This shift, together with a movement away from defensible locations and toward a clustered pattern, may reflect the increased power of particular lineages of local elites endorsed by the Inka.

Two chapters in this volume explore the sacrifice of humans and camelids on the north coast of Peru. Jonathan Kent, Teresa Rosales, Víctor Vásquez, Catherine Gaither, and Jonathan Bethard present findings from an excavation at Santa Rita B in the Chao valley (on the northern coast of Peru) where two episodes of sacrifice are described. In the Chimu transitional episode two human individuals were placed above a floor. In an earlier episode, found below the floor, seven camelids were aligned in a ceremonial arrangement in a Late Moche context. The authors then examine the sequence and transformation of ritual, starting with camelid and then human sacrifice documented in this location in light of

other transformations in ritual, economy, and sociopolitical organization in the area.

The second chapter discussing an excavation containing human and llama sacrifices on the north coast of Peru is by Nicolas Goepfert and Gabriel Prieto. They describe findings at Gramalote A–Huanchaquito, a Chimu site adjacent to Chan Chan. The settlement is a ceremonial space within a dune near the sea, and it contained a large number of remains of both young humans and young llamas that were sacrificed by removal of the heart and deposited at the edge of a sandy slope. While analysis is still underway, the finds are interpreted as llamas raised locally for ceremonial purposes. Temporal association with other Chimu sacrificial sites raises the question of whether the motivation behind these offerings can be linked to particular maritime events, such as El Niño–Southern Oscillation (ENSO).

The two final original chapters present studies among modern communities that continue the Andean tradition of using llama caravans to transport salt from the highlands to distant and lower-elevation communities. Nicholas Tripcevich provides an account of a 2007 journey from the Cotahuasi area in southern Peru to a valley 100 km to the north, near Antabamba, Apurímac. The chapter opens with an overview of caravan mobility and an introduction to the geography and to the Quechua-speaking herder community near the Huarhua salt source. The account of field research begins with a visit to the salt mine and the ritual activities prior to the caravan departure. The overall focus of this contribution is on features of movement such as trail widths and travel speeds, as well as the social and family ties that underlie many of the persistent exchange routes.

Axel Nielsen provides a chapter on ritual practices in a community of Bolivian llama herders and the role of ritual in negotiating the tension between caring for family herds and accessing pastures belonging to the commons. Nielsen presents three ritual events: earmarking, sacrifice to the mountain spirits, and the principal annual ritual associated with llama caravan trips. Focusing on these events, Nielsen interprets how the *llameros* fulfill their part of a social contract between herders with their herds and, more broadly conceived, with the agents in the ritual landscape such as place-spirits that inhabit mountains.

David Browman wraps up the volume by providing a general overview of the chapters, making suggestions for advancing these studies, and developing future lines of inquiry.

UNIFYING THEMES

Pastoralist landscapes represent one of the major themes discussed in the volume. Moore's contribution demonstrates the importance of highland wetlands (bofedales) and the constraints these present to camelid behavior and social organization with respect to climate change and seasonality. Vining addresses these constraints in relation to human settlement and carrying capacity. Other chapters consider the expansion of pastures through intentionally build silt dams (Lane and Grant) and irrigation networks (Kent and colleagues). Several chapters address the issue of historical-versus-prehispanic camelid distributions in lower-elevation areas, as well as the resilience of herding in light of past and present environmental change (deFrance, Goepfert and Prieto).

Intensification of camelid herding emerges as an important topic in this volume as many report an apex in camelid production during the Late Intermediate Period, and then a renewed focus on agriculture with a continuation of substantial herd sizes during the Inka period. The potential for intensification in pastoral systems is discussed by Vining, by Perales, by deFrance, and by Capriles. Kuznar places intensification, risk, and the nature of pastoral–agriculturalist relations in a global context. In the southern Titicaca basin, Bruno and Hastorf report that camelids had access to aquatic vegetation in certain contexts, and Vallières proposes that the qochas within the urban core of the Tiwanaku state during its height could have sustained enough animals to feed a city.

A recurring theme is the intertwining of human and animal relations in economy and ritual. In the story of camelid domestication (Moore) a mutually beneficial relationship between humans and camelids emerges. An alliance is implied in human-animal relations in practices such as the *tinku* prior to a caravan journey, where llamas are made to consume chicha (Tripcevich), and the *k'illpa* domestic ceremony honoring llamas (Nielsen). The presence of camelid sacrifices with human sacrifices affirms this connection (Goepfert and Prieto, Kent and colleagues) and camelid offerings are present in ceremonialism (Vallières). A rich theoretical study of the social contract between humans, animals, and the animated landscape (Nielsen) involves properly contextualizing the actions and obligations of the herders in the Andean setting where these occur.

The human and camelid ties are deeply social as well. Andean herding communities are responsible for creating and maintaining camelid breeds and the distinct and

complementary nature of llama and alpaca morphology despite their interfertility. Camelid labor must be credited for enabling human sociality to thrive in the puna by minimizing the cost of distance with caravans, enabling shared cultural community over the broad expanses, and supporting relatively large settlements and cultural formations. Furthermore, camelids generated considerable wealth for Andean communities through the production of fiber, dung, and other secondary camelid products.

CONCLUSIONS

The contributions in this volume touch on major aspects of the archaeological study of Andean pastoralism. This collection of chapters represents a mixture of new studies and critical surveys of existing literature. Most of these chapters discuss the nature and limits of their data sets such as geographical scope, the dangers of reliance on contemporary patterns, and the recently diminished status of herding. Broad topics include the domestication of South American camelids, changes in economic practices, development of pastoralist economies focused on animals, and affinity for camelids by Andean people expressed ceremonially. Together they articulate a major theme regarding the evolving relationship between humans, animal herds, and the Andean landscape. We hope this collection will encourage a new generation of studies that explore novel pathways for advancing the archaeology of Andean pastoralism.

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Chapter 2

Andean Pastoralism and Its Effect on Economic and Social Stability in the Andes

Lawrence A. Kuznar

In regions of the world where a distinct pastoral economy exists alongside agricultural economies, the pastoral sector often plays a key role in economic and political stability. By virtue of pastoral mobility, and often ambiguous political affiliations with more settled communities, pastoralists are in a position to either integrate disparate communities, or to destabilize political relations among them. A full understanding of social dynamics in a region with a pastoral economy requires knowledge of the political and economic roles pastoralists play.

The social dynamics between pastoral and agricultural sectors of a society are likely to have deep pasts subject to social evolutionary changes, accessible only through archaeology. Understanding the historic and especially prehistoric role of pastoralists in political dynamics requires a middle-range theory that allows pastoralists in the archaeological record to be identified and their place in past social systems to be inferred.

In this chapter, I will review several cultural models of pastoral influence on social stability. Then, I review some of the ethnoarchaeological research conducted in the Andes that may help identify prehistoric pastoralists and the economic and social roles they played in the past. I then will outline several historical overviews that describe changing economic and political roles of pastoralists in the Andes. The chapter concludes with suggestions for future research that will help archaeologists illuminate the influence of the pastoral sector on indigenous Andean political developments.

CULTURAL MODELS OF PASTORALISM

Pastoralists have held a problematic position in relation to the larger societies in which they are embedded, perhaps since their inception (Khazanov 1994). Today pastoralists play key roles in destabilizing whole nation-states. Somali pastoralists migrated to Mogadishu and fought for power there, leading to the collapse of the Somali state in the early 1990s (Simons 1995); Tuareg separatists currently threaten the government of Mali (Keita 1998). Eritrean camel pastoralists provide a key link in the human-trafficking networks between sub-Saharan Africa and the Middle East (Humphris 2012), and pastoralists provide key supply links to Afghan insurgents and other combatants (Bhatia and Sedra 2008).

Some of the earliest historical records refer to the political challenges pastoralists pose for settled agricultural societies. In the fifth century BCE, Herodotus described Sythians' seemingly barbaric and dangerous ways with a mix of awe and loathing (Herodotus 1972). Ancient Sumerians attempted to rein in the pastoralists on their margins in the eighteenth century BCE (Simon 1981). In the fourteen century CE, Ibn Khaldun (1967) detailed

cyclical patterns of raiding, conquest, settlement, and raiding, re-conquest, and so on in the history of Bedouin and Berber relations with settled villages in the Middle East and North Africa. Twentieth-century historians and anthropologists confirmed these cyclical patterns in central Asia and the Far East (Barfield 1989; Lattimore 1951; Khazanov 1994). Ethnographers have also described patterns of tension and cultural, if not psychological, differences between settled agriculturalists and pastoral nomads (Berntsen 1976; Goldschmidt 1979; Parkington 1984). In many ways pastoralists seem destined for contention with settled village folk, given the mobility, competitiveness, and martial characteristics inherent in a herding way of life.

On the other hand, pastoralists provide essential goods and services for settled village societies, and may always have (Barth 1973; Stein 1987). Settled village life in many parts of the world would not be possible without a pastoral segment to the economy.

In the Andes the dichotomy between pastoral and agricultural ways of life is challenged because of the extremely variable combinations of herding and agriculture that characterize the innovative ways Andean people have adapted to specific environmental contexts (Browman 2008; Yacobaccio 2007; Yacobaccio et al. 1998). Idealized contrasts between dangerous, wanton pastoral wildness, and settled, restrained, and civilized agricultural life historically were drawn by Andean people and continue to be ritualized to this day (Bastien 1987). Nonetheless, the pastoral sector has been an essential part of the Andean economy in the past (Garcilaso de la Vega 1966 [1616]) and through history (Dransart 2002, 2011; Nielsen 2009; Sendon 2009). Pastoralists continue to provide a critical economic link between communities (Webster 1973; Casaverde 1977; Nielsen 2001; Tripcevich 2008, this volume). Therefore, more realistic models of the integration of pastoral and agricultural economies are necessary to capture the realities of Andean pastoralism, and frankly, of pastoralism in many parts of the world where communities are neither wholly pastoral nor agricultural.

Simulation studies of agropastoral economies offer a means of capturing the range of theoretical possibilities for social interaction between pastoral and agricultural sectors in a society. These models have the added benefit of being generalizable, once key variables are identified, and they can then be re-parameterized to model different specific contexts. For instance, an initial model developed for Middle Eastern wheat/barley agriculture and sheep/goat pastoralism demonstrated that cyclical periods of peaceful trade and predatory raiding would be the norm for social interaction between agricultural communities and pastoralists in that region (Kuznar, Sedlmeyer, and Kreft 2008). Re-parameterizing the model for environmental and demographic conditions in Western Sudan yielded a less stable cycle of more intense raiding and trade. Introducing prolonged drought to the model led to a state change to purely predatory raiding that ended in genocide of the agriculturalists (Kuznar and Sedlmeyer 2005). These models demonstrate that simplistic conceptual models of violence and instability versus peaceful economic integration are unrealistic for the agricultural/pastoral dynamic. Social and economic processes may be generalizable, but local conditions and chance historical events render each society's experiences unique.

ANDEAN PASTORAL ETHNOARCHAEOLOGY

Models of culture and behavior need to be flexible to be adapted to each region's unique conditions. In addition, there must also be adaptable methods for interpreting agricultural and pastoral economic activities in the past to capture the complexity of past systems.

Much work has been done to begin the process of establishing the requisite middle-range theory for supporting inferences of economic behavior in the Andean archaeological record. Ethnoarchaeological studies have detailed the material correlates of specific tasks (butchery, meat consumption, wool and yarn manufacture), pastoral community structure and development, and Andean ritual behavior (see Browman 2008; Kuznar 2001a for reviews). Furthermore, these works have both provided direct analogies as well as more general analyses of social processes such as economic decision-making, conflict, and land use (Kuznar 2001b).

Trade is one way in which pastoralists can particularly influence social stability and instability. On the one hand, trade integrates communities through economic interdependence and the sharing of ideas, but on the other hand, trade can be instrumental in comingling competing ideologies and in supplying contending polities with the means of destruction (Sidky 2007). Two ethnoarchaeological studies of llama caravaning provide critical expectations for identifying interregional and interethnic trade in the Andes.

Axel Nielsen (2001) described llama caravaning in Cerrillos, Bolivia. *Caravaneros* traded meat, wool, *ch'arki* (dried meat), ropes, textiles, medicinal plants, gold, salt,

yareta cushions for fuel, and their own labor for maize, food, alcohol, coca, and money (Nielsen 2001:167–168). In remote regions of the high-altitude Bolivian and Argentine altiplano, llama caravans continue to perform an economic integrative function. In addition to his description of social processes, Nielsen (2001) also provides invaluably detailed descriptions of caravaning sites, and the ritual sites and practices that are central to Andean caravaning, which form the basis for inferring these social processes in the past.

Nicholas Tripcevich (2008, this volume) provides another detailed description of llama caravaning in the central Andes of Peru. There, the economy is centered on trading salt for tubers, maize, and money. He also notes that caravaneros perform a political role as diplomats between communities. One particularly interesting material correlate to caravaning was his observation that llamas often assume a wide, wedge-shaped formation, approximating the width of Inka roads, which are notably wide.

Much more work on the material indicators of pastoralism and pastoral trade is necessary, but the authors above are laying the foundation for interpreting the archaeological record, and for identifying the variability of economic and ultimately political behavior of prehistoric pastoralists. The next section reviews proto- and ethnohistoric accounts of the roles Andean pastoralists likely played in the economic and political lives of Andean people.

THE HISTORY OF ANDEAN PASTORALISM AND ITS RELATION TO SOCIAL STABILITY

Nielsen (2009) provides a valuable description of late prehistoric and protohistoric herding in southern Bolivia and northwest Argentina. He examines how land use and trade vary across three periods of time, Early Regional Developments (1000–1250 CE), Late Regional Developments (1250–1450 CE), and Inka (1450–1535 CE). During the period of early regional developments, agricultural villages emerged in lower zones, while the high-altitude puna was inhabited by undifferentiated pastoralists who engaged in caravan trade, providing goods and links between emerging ethnic groups in lower altitudes. Late Regional Developments (1250–1450 CE) were characterized by drought, conflict, and the emergence of nucleated, defensible villages in the lowlands. Furthermore, these lowland communities maintained communal herds, which were kept, probably by specialists, in higher-altitude zones, and brought to villages for slaughter. The pastoralists in the highest-altitude zones, however, seemed unaffected by these developments, and they continued to exist in dispersed family hamlets, although evidence that these herders began caravaning indicates that they increased their role as interlocutors and integrators in an otherwise Balkanizing region. During the Inka era (1450–1535 CE), high-altitude pastoralists remained undifferentiated and unattached to the larger communities, although at this time the larger communities were subjugated and integrated into the Inka realm. High-altitude pastoralists continued their caravaning, although there is suggestive evidence that they may have been employed as neutral drovers for Inkan caravans that would have been instrumental in the exacting of tribute from ethnic communities in lower altitudes.

Nielsen's reconstruction of pastoral life indicates that pastoralists served as important economic integrators throughout late prehistory and during the Inka period. Their role in maintaining or weakening social stability is ambiguous. On the one hand, they served as interlocutors between emerging ethnic groups, but they also appear to have maintained an ambivalent role in the region's politics. When groups were more peaceful, pastoralists integrated the region through trade, but this economic integration did not stop Balkanization during the Late Regional Development period. When the Inka state conquered the region, high-altitude pastoralists may have simply been guns for hire who shifted their roles as drovers and tradesmen to facilitators of the Pax Incaica and exploitation of local ethnic groups.

Gil Montero (2009:42) takes Nielsen's protohistoric reconstruction into the early historic period of Lipez, Bolivia, with her description of how Spanish mining operations impacted the high-altitude pastoralists of this region. The Spanish established a string of mining cities across the Andean highlands, especially in the region around Potosí. Indigenous people were taxed by having to work in the mines, creating large communities of miners and Spaniard mine bosses. High-altitude pastoralists adapted to this new political and economic situation by providing labor as drovers (sometimes as payment of tax), and by caravaning in order to supply these urban centers with necessary goods such as wood, salt, coal, and, of course, coca and food. High-altitude pastoralists also adapted to the Spanish monetary economy, by acquiring currency through their trading activities.

Several authors reference the Visita of Diez de San Miguel in 1567 as a source for describing high-altitude herding during the Spanish conquest, providing another view of transformations of the indigenous pastoral economy with colonialism. The purpose of this *visita* was to survey the wealthy Lupaqa kingdom, and to assess its wealth and potential for tribute. The Lupaqas already had well-established herds, and were much engaged in the production of wool and meat, as well as the transportation of goods, during Inka times. The Lupaqas also maintained communal herds for the support of poorer members of their realm, to provide a stock from which to draw tribute for their previous Inka overlords, and to insure against hazards (Dransart 2011; Gil Montero 2009).

The Spanish appear to have absconded with the communal herds through various means, reducing Lupaqa state herds to family holdings, eliminating state herding functions. In this manner, the Lupaqa system of herding came to resemble the family-based herding systems of today (Gil Montero 2009). Dransart (2011) reinforces this past-present similarity by referencing herding terms in Bertonio's colonial Aymara–Spanish dictionary, which mirror similar domestic, not state, practices (such as keeping studs with flocks and gifting llamas to children at first hair cutting). However, the Spanish developed their own tribute system, and Lupaqa caravans continued to be essential for moving goods to Spanish overlords, as these caravans did for the earlier Inka (Dransart 1991).

The general picture that emerges for pastoralism during this early colonial period is one of local adaptations to the new colonial economic and political landscape. Despite shifts in the economic activities of pastoralists, they appear to continue their role in the economic integration of regions, perhaps even more so as the Spanish consolidated their viceroyalty. To the extent that the Spanish were able to appropriate indigenous herds and perhaps employ caravans for transport, indigenous pastoralism would have been an instrument of statecraft that would have aided Spanish control and administration. On the other hand, indigenous herders have always been difficult to census and control, and they may have facilitated resistance against the new colonial order. Further ethnohistoric and archaeological research needs to be done to clarify the role of indigenous herders in aiding the imposition of colonial rule versus resisting it.

Sendon (2009) chronicles shifts in land tenure and their impact on indigenous herders during the period of early state development and throughout the twentieth century in Peru. After independence in 1821, the Peruvian government moved to integrate the indigenous population into the new nation by granting land ownership to individuals. However, wealthier mestizos were then able to buy these lands, disenfranchising the indigenous population from lands traditionally held and protected by their communities. The reforms of 1920 were designed to provide indigenous people with a means of protecting community lands, but these reforms have largely ignored indigenous land-use patterns.

CONCLUSION

It is imperative to recognize that the following conclusions are inferences to the best explanation (Kelley and Hanen 1988); researchers have assembled their evidence, and made inferences as to what it means in the most empirically based and theoretically informed manner possible. Such inferences are heavily influenced by the availability of the empirical evidence and its completeness, as well as by current theory regarding pastoral–agricultural interaction. Given the sparse archaeological, ethnoarchaeological, and ethnohistorical data on hand, the inferences concerning the social, economic, and political roles of pastoralism in the Andean past are necessarily very provisional.

The archaeological evidence and ethnohistoric record clearly demonstrate that Andean pastoralists played an important role in the economic integration of Andean societies, and studies of llama caravans indicate that this economic role continues in some regions today. This integration took place in part because the caravans were the source of key Andean commodities, such as meat, wool, and their derivative products ch'arki and textiles respectively. However, Andean pastoralists also played a key economic integration role through their transport of goods across Andean zones.

The impact of Andean pastoralists on political stability is more ambiguous. Given the sparse evidence and relatively tentative conclusions offered by historians and prehistorians of Andean pastoralism, it appears that pastoralists more often aided and abetted political developments than they drove stability or instability (Nielsen

2009:239). In many regions, pastoralists' remote locations in the highlands appear to have exempted them from many of the political involvements of their more settled and nucleated lowland counterparts. One exception to this would be the more productive zones around Lake Titicaca, such as Chucuito in the Lupaqa kingdom, where dense populations could not escape the attention and influence of foreign conquerors such as the Inka and Spanish.

In all cases, pastoralists appear to have largely adapted to changing conditions, contributing to instability during times of disintegration, when they may have supplied competing factions with goods, and promoting enforced peace during the Inkan and Spanish conquests, when pastoralists aided the dominant states in extracting tribute from conquered polities, thereby providing the centralized states with the economic power to dominate and consequently pacify their realm.

The soundest inference available is that since the development of relatively complex societies Andean pastoralists have a history of opportunistically avoiding political entanglement and co-option by states for pacification,. However, more detailed ethnoarchaeological research on the destabilizing effects of Andean pastoralists during the past 2000 years, as well as ethnographic investigation, may well be in order, given the destabilizing influences noted for pastoralists in other parts of the world. Furthermore, much more work has to be done to track the interrelationship of Andean pastoralism with Andean agriculture and foraging as these economic forms developed out of their hunting and gathering roots. In the end, providing a more fine-grained understanding of the impact of Andean pastoralists on economic and political stability will inform a larger anthropological understanding of the role of pastoralists in economic and political integration. It may be that Andeanists have missed the destabilizing effects of Andean pastoralism, or it may be that Andean pastoralists are unique in providing largely integrative and stabilizing effects on the societies with which they interact. Only more research will tell.

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