Assembling States: Community Formation And The Emergence Of The Inca Empire

Thomas John Hardy
University of Pennsylvania, thomashardy6@gmail.com

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Assembling States: Community Formation And The Emergence Of The Inca Empire

Abstract
This dissertation investigates the processes through which the Inca state emerged in the south-central Andes, ca. 1400 CE in Cusco, Peru, an area that was to become the political center of the largest indigenous empire in the Western hemisphere. Many approaches to this topic over the past several decades have framed state formation in a social evolutionary framework, a perspective that has come under increasing critique in recent years. I argue that theoretical attempts to overcome these problems have been ultimately confounded, and in order to resolve these contradictions, an ontological shift is needed. I adopt a relational perspective towards approaching the emergence of the Inca state – in particular, that of assemblage theory. Treating states and other complex social entities as assemblages means understanding them as open-ended and historically individuated phenomena, emerging from centuries or millennia of sociopolitical, cultural, and material engagements with the human and non-human world, and constituted over the longue durée.

This means that understanding the emergence of the Inca state, and the historically contingent form it took, requires investigating the transformations of local and regional communities in the Cusco heartland. The multiscalar nature of this type of investigation also demands an examination of processes occurring at particular local communities through time. To resolve this, I directed excavations at the archaeological site of Minaspata, located in the Lucre Basin in the southeastern part of the Cusco region, followed by analyses of the material remains recovered from the site. These include fine-grained investigations of the ceramic patterns, the faunal and macrobotanical remains, and the procurement of obsidian through long-distance exchange. By comparing these patterns to those of the larger Cusco region, an understanding of how the Cusco regional community cohered and broke apart at various points in time can be gained. This regional community eventually gave rise to the Inca state, providing the raw material for Inca projects of sovereignty and subject-making. Although the period before Inca emergence was marked by processes focused on the localization of community, the sociocultural and material frameworks established through complex histories of interaction over millennia enabled the Cusco region to reproduce itself as a self-recognizing, coherent social entity, a critical necessity for the emergence of Inca sovereignty.

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ASSEMBLING STATES: COMMUNITY FORMATION
AND THE EMERGENCE OF THE INCA EMPIRE

Thomas John Hardy

A DISSERTATION

in

Anthropology

Presented to the Faculties of the University of Pennsylvania

in

Partial Fulfillment of the Requirements for the

Degree of Doctor of Philosophy

2019

Supervisor of Dissertation

_________________________
Dr. Clark L. Erickson
Professor of Anthropology

Graduate Group Chairperson

_________________________
Dr. Theodore G. Schurr
Professor of Anthropology

Dissertation Committee

Dr. Lauren Ristvet, Associate Professor of Anthropology

Dr. Richard M. Leventhal, Professor of Anthropology
To my grandpa Van, who taught me the value of knowledge for its own sake
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Writing this dissertation has been a challenge for me on many levels, and it is no exaggeration to say that it could not have been completed without the help, support, and love of countless friends, mentors, and colleagues. This dissertation is, in part, about assemblages – as the heterogeneous entities that make up reality. This dissertation is itself also an assemblage – not just of words and ink and paper, but of the effort and support of an entire community of friends and scholars who helped me write it. I’ve never felt so lucky as I do now, reflecting on all those who have given me their support over the years.
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ABSTRACT

ASSEMBLING STATES: COMMUNITY FORMATION AND THE EMERGENCE OF THE INCA EMPIRE

Thomas J. Hardy

Dr. Clark L. Erickson

This dissertation investigates the processes through which the Inca state emerged in the south-central Andes, ca. 1400 CE in Cusco, Peru, an area that was to become the political center of the largest indigenous empire in the Western hemisphere. Many approaches to this topic over the past several decades have framed state formation in a social evolutionary framework, a perspective that has come under increasing critique in recent years. I argue that theoretical attempts to overcome these problems have been ultimately confounded, and in order to resolve these contradictions, an ontological shift is needed. I adopt a relational perspective towards approaching the emergence of the Inca state – in particular, that of assemblage theory. Treating states and other complex social entities as assemblages means understanding them as open-ended and historically individuated phenomena, emerging from centuries or millennia of sociopolitical, cultural, and material engagements with the human and non-human world, and constituted over the longue durée.

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CHAPTER 1

INTRODUCTION

This dissertation investigates the processes through which the Inca state emerged in the south-central Andes, ca. 1400 CE in Cusco, Peru, an area that was to become the political center of the largest indigenous empire in the Western hemisphere. The formation of pre-modern states and other complex polities has been a topic of intense investigation in archaeology since its inception. The earliest serious treatments of the state within the field of anthropological archaeology began in the 1960s and 1970s with the resurgence social evolutionary or “neo-evolutionary” theories. Delineating and refining the structures of different social forms, which were held to be universal and timeless constructs in this theoretical model, was the subject of significant theoretical and epistemological research in the latter half of the twentieth century. Yet this approach has come under withering criticism over the past few decades, and little new scholarship on complex societies in archaeology explicitly positions itself within neo-evolutionism. Building on critiques of this theoretical model, more recent scholarship has taken more historically situated approaches by focusing on the various sociopolitical practices that legitimize and reproduce claims of authority, create separation between sovereign bodies and political subjects, and ensure the uninterrupted flow of critical resources and materials, labor, and people.

However, while some exceptions exist, most of these more recent approaches have focused on the operation of pre-modern states over relatively short scales of time,
responding to the critiques of neo-evolutionary models by eschewing a consideration of the processes which lead to the emergence of complex polities altogether (Robb and Pauketat 2013a). Archaeology as a discipline has had difficulty moving beyond the language and concepts of social evolutionary theory (despite explicit attempts to do just that) in part because these concepts are embedded in the ontological categories of Western modernity, of which the discipline of archaeology is very much a part. These categories tend to dichotomize the world into oppositions, such as mind/matter, culture/nature, subject/object, human/non-human, and so on (Harris and Cipolla 2017; Thomas 2004). A related problem is that of archaeology’s conceptualization of long-term historical change and stability, which is assumed to operate at variable rates against the sequential march of time: human history progresses through long periods of stasis marked by rapid events or moments of transformation.

The collective consequences of operating in this ontological framework are a series of different approaches to explaining large-scale sociocultural phenomena which all focus on identifying single causes and prime movers. These causes are frequently found in transhistorical processes such as demographic pressure, agricultural and economic intensification (and the assumption of control over such resources by social elites), and climatic variation. Little consideration is usually given to why these processes occur in the first place, or why they necessarily produce complex polities – instead assuming that humans are naturally inclined towards increasing levels of sociopolitical complexity under certain conditions. In addition, although multiple scales are regularly explored on a spatial dimension, few attempts have been made to understand how
different scales of time articulate and intersect. As a result, processes operating on one scale – the short, medium, or long-term scales of time – are generally treated as the most important causal mechanisms producing social and cultural change; which scale is elevated as determinative often depends on which scale is under analysis.

The end result of these problems is an inevitably reductionist and impoverished understanding of the past. In this dissertation, I argue that what is required to overcome such issues is an ontological shift towards a relational perspective – in particular, that of assemblage theory (Bennett 2010; DeLanda 2006, 2016; Deleuze and Guattari 1987). Assemblages are entities composed of heterogeneous configurations, which operate simultaneously at multiple scales of time and space. These assemblages only emerge from, and are maintained through, the interactions between their constituent components. However, once emerged, they form ontologically real entities which cannot be explained by or reduced to their parts. Importantly, these components – each of which is a smaller-scale assemblage in its own right – are not merely human, but include plants, animals, material objects, buildings, landscapes, and other entities, as well as expressive components such as values, beliefs, meanings, and emotions.

Treating states and other complex polities as assemblages means understanding them as historically individuated, emergent phenomena; they are complex entities linking together various practices, ideologies, institutions, constructions of authority, material things, and more. Sovereignty – as a particular configuration of political practice, constituted by a transcendent form of political authority and enforced through symbolic and physical violence (Routledge 2014; Smith 2011, 2015) – emerges from the
interaction of these constituent parts to provide direction and intelligibility to the various actants entangled in configurations which are designed to reproduce relations of state and sovereign authority. Creating these configurations of sovereignty necessarily involves drawing elements from pre-existing practices and institutions, which are translated and made intelligible as mechanisms of sociopolitical, cultural, and material order to local people – thus creating political subjects. Furthermore, claims of sovereignty can only be made in the first place over a mutually recognizable, coherent public – what I define in this dissertation as a “regional community” – with shared cultural understandings and material markers of inclusion and exclusion, defining the social, cultural, and spatial boundaries of community.

Consequentially, understanding the emergence of states requires investigating the formation of existing sets of sociocultural, political, and material relationships linking regional communities together. This involves a multitude of different interactions and intersections occurring over centuries or millennia, which operate, change, connect, and cohere at different scales and at different rates. Ultimately, state formation is a multiscalar process, emerging over the *longue durée*. Adopting this assemblage-based perspective, I approach an investigation of Inca state emergence in this dissertation by tracing the historically contingent development of the Cusco regional community, tacking back and forth between the larger region and the smaller-scale community based at the archaeological site of Minaspata in the Lucre Basin. In doing so, I focus on the processes alternately promoting the integration and coherence of the larger-scale regional
community, and those acting to disrupt it by hardening boundaries between local communities and introducing new social, cultural, and material elements.

The Formation of the Inca State

The Inca Empire began as a small complex polity based in the Cusco Valley in the south-central Andes of Peru, competing for resources and dominance amongst several small polities located in and around the valley. Around 1400 CE, having consolidated the area within 30-60 km from Cusco into a small political heartland, the Inca expanded outward, conquering or allying with polities and ethnic groups that they met along the way. By the time Francisco Pizarro and a small group of Spanish conquistadores arrived from Mexico in 1532, the Inca ruled an area of the Andes mountain range stretching from modern-day Ecuador to Chile. Pizarro’s arrival was timely for the Spanish, as a brutal civil war between Atahualpa and Huascar, two half-brothers competing for the Inca throne, had just ended with Huascar’s defeat and execution. The Spanish were able to take advantage of the ensuing political disarray in the aftermath, along with their own superior military technology and several indigenous groups disgruntled under Inca rule, to swiftly capture and execute the surviving Inca leadership and seize the imperial capital of Cusco (Hemming 1970).

John Rowe (1944), working primarily from ethnohistories recorded by Spanish chroniclers in the 16th and 17th centuries, originally stipulated a timeline for the consolidation of the Inca heartland and the early imperial expansions. Rowe also noted that nearly all of the ethnohistorical sources cite the ninth ruler of the Incas, Pachacuti, as
the one responsible for both acts. Although these various narratives differ somewhat in the details and the sequence of events, most state that Pachacuti (originally named Inka Yupanki) began his reign by leading an unlikely defense of Cusco against the invading Chanka (a loosely-organized polity presumably united by ethnicity), defying his father Viracocha Inka in the process. With supernatural assistance, Pachacuti repelled and subdued the Chanka invaders – an act that both propelled him to power and served as the beginning of the imperial phase of the Incas. Pachacuti was reportedly responsible for consolidating the Inca heartland, renovating Cusco into an imperial capital, and beginning the first imperial conquests of the Inca Empire.

Rowe places the start of this imperial phase and the shift into active imperialism as 1438 CE, based on what he considered to be the most reliable reading of several chronicles, though he relied most heavily on that of Miguel Cabello Balboa from 1586 CE (Rowe 1945). Rowe argued that the dates provided by Cabello Balboa were the most reasonable of the various dates given for events in Inca history by the various chronicles, which as a set contained numerous narrative inconsistencies. Part of the reason for these inconsistencies is that the Spanish chroniclers used many different indigenous informants, each of whom had different agendas during the massive societal reorganization which took place in the early years of Spanish rule. Furthermore, the chronicles which narrate the early years of Inca imperialism were generally recorded 150 years or more after the purported events took place, and later dynastic rulers had plenty of time and motivation to manipulate past events for political reasons. As Regina Harrison points out, the Incas had a more creative engagement with the past than Western
historians, and were less concerned with what actually happened than “what should have been” (2002:28); the perception of what this meant likely changed with the political landscape. Several chroniclers, such as Juan de Betanzos and Pedro de Cieza de León, point out that their Inca informants placed little importance on sequential narratives of historical events (see also Ogburn 2012).

These problems have led some scholars to argue that the chronicles should not be used as the primary method for interpreting Inca state formation and imperial expansion, even though the descriptions of the events themselves may be reasonably accurate (Bauer 1992; Bauer and Covey 2002; Bauer and Smit 2015; Covey 2006a, 2006b; Julien 2000; Ogburn 2012; Urton 1999). In fact, R. Tom Zuidema (1982) has gone further, arguing on theoretical grounds that the Inca histories recorded in the chronicles are primarily mythological in origin, and cannot be used to create a linear, Western-style narrative – although this is not a view held by most scholars. However, historical inconsistencies are not the only problem with relying exclusively on the ethnohistoric texts: such an interpretation also suffers from the same flaws as any “Great Man” theory of historical change, focusing as it does on the actions of transformative historical figures while ignoring the long-term societal, political, and ecological processes that create the conditions in which social change is made possible. While many of the actual events described likely occurred, many others probably did not (or occurred differently than described), and relying exclusively on the chronicles to understand the emergence of Inca imperialism is fraught with potential error.
Table 1.1: Chronology of the Andean region; chronology of the Cusco region

<table>
<thead>
<tr>
<th>Andean Chronology (Rowe 1945)</th>
<th>Cusco Regional Chronology (Bauer 2004)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Late Horizon</td>
<td>1438-1531 CE</td>
</tr>
<tr>
<td>Late Intermediate Period</td>
<td>1000-1400 CE</td>
</tr>
<tr>
<td>Middle Horizon</td>
<td>600-1000 CE</td>
</tr>
<tr>
<td>Early Intermediate Period</td>
<td>200 BCE-600 CE</td>
</tr>
<tr>
<td>Early Horizon</td>
<td>800-200 BCE</td>
</tr>
<tr>
<td>Initial Period</td>
<td>2100-800 BCE</td>
</tr>
<tr>
<td>Pre-Ceramic Period</td>
<td>ca. 3500-2100 BCE</td>
</tr>
</tbody>
</table>

| Late Horizon                   | 1400-1531 CE                          |
| Late Intermediate Period       | 1000-1400                             |
| Middle Horizon                 | 600-1000 CE                           |
| Qotakalli Period               | 200-600 CE                            |
| Late Formative Period          | 500 BCE-200 CE                        |
| Middle Formative Period        | 1500-500 BCE                          |
| Early Formative Period         | 2200-1500 BCE                         |

More attention has been given in recent years to the economic and political processes in the Cusco region which led to the formation of the Inca state (Figure 1.1). While recognizing that Pachacuti may have been an influential historical figure, Brian Bauer and Alan Covey (Bauer 1992, 2004; Bauer and Covey 2002; Covey 2003, 2006a, 2008) have argued that the process of state formation probably took place over a longer period of time during the Late Intermediate Period (1000-1400 CE, abbreviated “LIP”), and involved the consolidation of the heartland primarily through longer processes of alliance-building, competition, and conflict, beginning as early as 1000 CE. Although relying heavily on the Spanish chronicles, they include extensive settlement survey data from the Cusco Valley and surrounding regions, and suggest the relatively autonomous process of state formation was mostly complete by 1400 CE. These surveys suggest that the population of the Cusco Valley grew markedly after 1000 CE, as Cusco began to dominate a developing urban hierarchy, and that the Incas slowly and unevenly extended their dominance over neighboring peoples throughout the LIP, albeit with varying degrees of success. Bauer and colleagues’ work in the Chanka homeland of Andahuaylas (2010; Bauer and Kellett 2010; Kellett 2010) has also cast doubt on the importance of
Pachacuti’s crucial victory over the invading Chanka, arguing that few, if any, sites from this time period are large enough to suggest that the Chanka could have mustered the level of military threat that the Inca testimonies suggest.

Gordon McEwan, who has excavated key sites in the Lucre Basin on the eastern end of the Cusco Valley, has suggested that the Inca Empire is better understood as a “regenerated” state emerging from the aftermath of the previous Wari state (McEwan 2006a; McEwan et al. 2002, 2005), which established a major presence in the Cusco region during the Middle Horizon (600-1000 CE) through the construction of colonies at

---

Figure 1.1. Map of the Cusco Region, with major towns and geographical regions indicated.
Pikillacta and other sites (McEwan 1991, 1996, 2005). In this model, the early Inca state only becomes recognizable and dominant after the 1400s, when the specific styles of pottery and architecture used as markers for the Late Horizon (1400-1532 CE) across the Andes become fully developed (McEwan 2006b). The crux of this argument lies in the Cusco region’s position as the locus of 400 years of Wari colonization during the Middle Horizon, and its long-standing cultural ties to the Lake Titicaca basin to the southeast. Aided by the inheritance of Wari practices and institutions (implied by the existence of Wari influence in the material culture and architecture in the southeastern area of the Cusco region) and a possible migration of elites from the Lake Titicaca Basin during the Late Intermediate Period (Hiltunen and McEwan 2004; McEwan 2006a), the Inca emerged as an imperial polity around 1400-1430 CE with fully formed state institutions, practices, and infrastructural knowledge. For McEwan, this set of tools was critical to the Incas’ extraordinarily rapid expansion.

These three theories regarding the rise of the Inca state seem, on the face of it, mutually incompatible. The depiction in the ethnohistoric documents bears little resemblance to that of a small, emerging complex polity slowly consolidating power and incorporating surrounding ethnic groups over a 300-400 year period, as suggested by Bauer and Covey’s survey data. This survey data, however, has its own problems, some of which are inherent in the limitations of relying on surface collections of diagnostic ceramics. The conclusions drawn from this survey data rely on the distribution of Killke style ceramics, which were most likely produced in the Cusco Basin during the Late Intermediate Period, and are used by Bauer and Covey as a marker of expanding Inca
state power as the “Inca heartland” is formed. However, Melissa Chatfield (2007, 2010, 2015) has argued that the production of this style is likely to continue alongside Inca ceramics through the Late Horizon and into the early Colonial period – an obvious problem for a survey methodology which relies on the presence of Killke pottery to distinguish LIP sites from Late Horizon ones. The problems in uncritically using site size and a settlement pattern hierarchy to determine the degree of socio-political integration have also been documented (e.g., Crumley 1976, 1979, 1995; Kosiba 2011:123–125; Smith 2003). Finally, Bauer and Covey’s assumptions regarding autochthonous state development dismiss many of the potential impacts of earlier Wari colonization in the Cusco region.

McEwan’s research in the Lucre Basin, on the other hand, is potentially too focused on the potential role of earlier, external influences. While benefiting from decades of comprehensive excavation in the Lucre Basin, located on the eastern end of the Cusco region (see below) – particularly at Choquepukio, a significant archaeological site with substantial LIP and Inca remains – his research lacks the regional perspective of large-scale survey. McEwan’s interpretations may also conflate patterns of Wari and Lake Titicaca basin influence evident in the Lucre Basin with that of the Cusco region writ large, where the intensity and duration of these influences have not been as well established. Finally, McEwan’s argument that a migration of elites from outside of Cusco may have contributed to the leadership of the Inca regime is currently supported by little reliable evidence.
Regardless of the differences between these models, scholars generally agree that after the final part of the Cusco heartland was incorporated into the new Inca state, Cusco was reconstructed as an imperial capital, and the Inca began expanding throughout the Andes. Many, though not all, of the newly incorporated ethnic groups around Cusco were granted the status of “Inca-by-Privilege” with a social status immediately below that of Inca kin-groups (Bauer 1992, 2004). Once imperial expansion began, however, both archaeological and historical data tend to either focus on the Inca power dynamics in the city itself, or shift towards developments in the provinces which the Inca subjugated. Most of the non-Inca ethnic groups in Cusco are mentioned in the chronicles thereafter only in relation to state objectives, and few large scale excavations in the Cusco region have focused on these groups during the Late Horizon and the preceding Late Intermediate Period. A recent exception to this is the research by Steve Kosiba (2010, 2011, 2012; Kosiba and Bauer 2013), who has documented how the Inca state brought some areas of the Cusco region under Inca rule through a process of “conversion” at the site of W’ata and other important places around the region. This involved the ritual destruction and burial of LIP structures and activity spaces, followed by the construction of new Inca plazas, buildings, and walled compounds on top of these buried remains.

However, Kosiba’s research pays less attention to how the development of these sites over the long-term tied into Inca state formation, while Bauer and Covey’s analysis begins at the beginning of the Late Intermediate Period. As I argued above (see also Chapter 2), understanding how the Inca state emerged in a historically contingent fashion – and why it took the particular form that it did – necessitates examining the long-term
integration of the Cusco regional community at multiple scales. As McEwan has rightfully asserted, a critical component of these questions is the specific (if differential) impact that Wari state colonization during the Middle Horizon had on the different areas of the Cusco region – and, in particular, whether this colonization resulted in long-lasting and unanticipated consequences contributing to the emergence of the Inca state. Addressing this issue requires investigating not only the development of the regional community on the larger scale, but the transformations of local communities that would have been most affected by the Wari state colonies. The site of Minaspata, located in the Lucre Basin, is an ideal place to begin such an investigation.

**Minaspata and the Lucre Basin**

Located at the convergence of the Vilcanota and the Huatanay Rivers, the Lucre Basin serves as a transportation junction between the Cusco Basin, the Vilcanota River valley, and the Lake Titicaca Basin further southeast (Figure 1.2). The Lucre Basin is home to the site of Pikillacta, which is the largest example of Wari-style architecture outside of the capital city of Huari in the Ayacucho heartland itself. Inca remains are also prevalent throughout the basin, including on parts of large pre-existing sites. The main Inca road leading from the center of Cusco to southern end of the Inca Empire in Argentina also passed through the Lucre Basin, turning from east to south as it passes the site of Choquepukio to follow the Vilcanota River (Instituto Nacional de Cultura [INC] 2007). Large sets of hillside terraces can be found on the northern and southern sides of the basin, and a long, complex set of canals fed water to terraces and fields, including
most likely to Pikillacta itself, beginning in the Middle Horizon and likely continuing into later periods (Valencia Zegarra 1996, 2005).

Figure 1.2. Map of the Lucre Basin.

From 2013-2015, I directed the Minaspata Archaeological Project (Proyecto de Investigaciones Arqueológicas Minaspata, abbreviated PIAM) at Minaspata, a 35-ha, multicomponent site located on the southern side of the Lucre Basin, about 30 km east of Cusco (Figure 1.3). The first phase of this project consisted of excavations in 2013,
followed by artifact analysis seasons in 2014 and 2015, and selected survey along the southern side of the Lucre Basin throughout both seasons. Minaspata is approximately 1-2 km from the sites of Pikillacta and Choquepukio, and can be found on a raised promontory on the south side of Lake Muina (also known as Laguna Huacarpay).

Figure 1.3. The archaeological site of Minaspata.
Minaspata has generally been interpreted as a village which grew into the center of a small complex polity in the Late Intermediate Period, and initial survey indicated a long history of continuous occupation dating from the Middle Formative Period through the end of the Late Horizon. This long occupation history was essentially confirmed by our excavations, with one (major) caveat discussed in later chapters. Minaspata was the likely center of the Muina ethnic group, mentioned in several of the chronicles as closely related to the Pinagua ethnic group, who were likely based at the site of Choquepukio; each group apparently formed a small, semi-autonomous polity based on ethnicity. These two groups together were described as particularly resistant to Inca rule and difficult to subjugate in several ethnohistories recorded by different Spanish chroniclers, eventually requiring wholesale conquest as the final piece of the Inca heartland (see also Bauer and Covey 2002:858–859). Archaeological evidence essentially confirms these descriptions of this hostile relationship: survey data indicates that the intervening Oropesa Basin (located between the Lucre Basin at the eastern end of the valley, and the Cusco Basin at the western end of the valley, where the early Inca polity was located) was almost completely emptied during the Late Intermediate Period, creating a buffer zone between the two areas (Bauer 2004:84; Bauer and Covey 2002). Additionally, McEwan’s excavations at Choquepukio reveal evidence of Inca conquest of the Lucre Basin around 1430 CE. Subsequent events in the archaeological record suggest that the Inca appropriated the *huaca*¹ at Choquepukio and began constructing storehouses and housing

---
¹ A sacred shrine, stone, or place on the landscape, possessing its own animating force and capabilities to affect action. Though this gloss hardly conveys the complexity of this indigenous concept, see, for example, Bray (2015) for further discussion.
for laborers, eventually transforming Choquepukio into an Inca ritual site which also supported the state economy through the production of textiles and ceramics (Andrushko et al. 2011; Gibaja Oviedo et al. 2014; McEwan 2006a; McEwan et al. 2005, 2002).

The historical and archaeological record for Minaspata, and the Muina ethnic group, is less complete. Earlier archaeological research on Minaspata is small in scale and mostly unpublished, but what has been published has largely focused on better defining Late Intermediate Period ceramic styles (Dwyer 1971a) and the occupation phases prior to the LIP (Dwyer 1971b, 1986). From 2014 to 2015, the Peruvian Ministry of Culture (Dirección Desconcentrada de Cultura - Cusco) undertook the Programa de Investigación Arqueológica Ocupación Humana en la Sub Cuenca de Lucre (abbreviated PRIA-Lucre). The project was focused primarily on identifying the nature of the cultural phases of occupation in the Lucre Basin through excavations at Minaspata; these excavations have produced significant amounts of data (Quispe Serrano et al. 2016) but only brief overviews have been published so far (Chapter 5). To date, the larger archaeological community has only a basic understanding of the different cultural components present at Minaspata, and almost no idea of the site’s role in the development of the Cusco region and the emergence of the Inca state.

Several factors make Minaspata and the Lucre Basin an ideal area to study the emergence of the Inca state and the long-term development of the Cusco regional community on a more local scale. The long history of occupation at Minaspata provides an excellent opportunity to understand diachronic changes from the Formative Period to the Late Horizon at a single settlement, without having to account for regional variation.
in sociocultural practices. In addition, the site’s proximity to the major Wari colony at Pikillacta enables an investigation of the local transformations occurring at settlements that would have been most directly impacted by colonization and intense interaction with the Wari state. In fact, the Lucre Basin is perhaps the only location in the Cusco region where evidence of intensive Wari investment overlaps with the later consolidation of the Inca heartland; while another large Wari colony was constructed in the Huaro Valley, approximately 20 km south of the Lucre Basin, this area seems to be just outside of the initial territory of the Inca state. Given the site’s lengthy occupation history, Minaspata may be one of the only sites in the Andes with the potential to directly address this topic.

In addition, previous archaeological research in the Lucre Basin indicates that Wari state colonization set the communities in this area on a distinct trajectory from the rest of the region during the Late Intermediate Period, following the abandonment of these colonies. These differences are evident in a fairly distinctive material culture in the Lucre Basin, relative to that of the rest of the region. The differences are most notable in the built architecture and in the Lucre ceramic style of the LIP, which share similarities with earlier Wari material culture. Some of the larger stone buildings still standing at Choquepukio resemble Wari walls at Pikillacta, both in monumentality and construction style – a feature which is generally absent in LIP architecture outside of the Lucre Basin.² The ceramics of the Lucre Basin also mark a material distinction from the rest of the

² This distinctive “Lucre” style architecture is not apparent at Minaspata, however, signaling possible differences in the later cultural development of the two sites; a second possibility is that any such walls did not survive to the present day, and there are sections of the site where thick above-ground wall foundations surrounded by large rubble piles suggest that monumental architecture, similar in form and construction to the walls at Choquepukio and Pikillacta, may have once stood on parts of Minaspata.
Cusco region; although the aptly named Lucre ceramic style overlaps in some characteristics with ceramic styles elsewhere in the region during the LIP, this style also bears clear similarities in vessel form, size, and decorative motifs to earlier Wari pottery. As a result, a better understanding of the social, cultural, and material changes which occurred at Minaspata between the collapse of the Wari colonies and the rise of the Inca state is critical to investigating any possible connections between these two complex polities. Although the collapse of the Wari Empire and the rise of the most characteristic elements of the Inca state are probably separated by about 300-400 years, the question of any potential impact of Wari colonization in the Cusco region is a pertinent one – whether in the form of inherited state institutions and imperial practices, or simply redefining what local configurations of “power” and “political authority” look like.

These patterns suggest that, at the minimum, four centuries of Wari occupation in the eastern part of the Cusco region contributed to distinct cultural trajectories of different communities, creating a situation characterized by expressions of political authority focused on processes of localization during the LIP (Kosiba 2010, 2011). However, self-recognizing publics are not predicated on political integration, but by shared social, cultural, and material assemblages. As a result, investigating the emergence of Inca sovereignty through the perspective of long-term regional community formation means attending to the impacts of Wari colonization and its legacy in the Cusco region. This, in turn, requires comprehending the scale and nature of changes which Wari imperialism brought about in the Lucre Basin – an issue that demands a multiscalar approach, tacking back and forth between the material record recovered from the site of
Minaspata and larger regional developments over multiple periods of time. In other words, to understand the formation of the Inca state through the long-term processes and assemblages constituting the Cusco regional community – the ultimate objective – we must ground our investigation in the smaller-scale assemblages from which the regional community emerges, and seek an understanding of how these scales interweave in the same set of materials.

Of course, not all components contributing to these communities at different scales can be reasonably analyzed in the space afforded in this dissertation. Such an undertaking would be tremendous and is best thought of as collaborative, emerging through the contribution of different archaeologists and research projects over time. Instead, my goal in this dissertation is to focus on a few components which contribute to our understanding of how the communities of Minaspata (on the smaller-scale) and the Cusco regional community (on the larger-scale) formed, dissipated, and transformed over time, eventually leading to the emergence of the Inca state. The components of these communities formed the raw matter from which the Inca state drew in assembling its continual project of sovereignty. The components I have chosen to focus on throughout the rest of this dissertation include the transformations in the occupation of the site of Minaspata, and the configuration of architecture and material culture which partially constituted its community through time; the style and form of ceramic vessels recovered from the site, and how these acted to entangle other communities across the Cusco region into a coherent, self-recognizing public; the processes of the consumption of plants and animals; and the identification of sources for obsidian fragments and tools from
Minaspata and the broader region, which helps identify how these multiple communities were embedded in larger interregional webs of interaction and exchange. These components in particular are central to processes of local and regional consumption, making them ideally suited to understand the constitution and transformation of identity and culture across the Cusco region.

Organization of the Dissertation

This dissertation begins with three chapters which lay the groundwork for the intervention outlined above, addressing the theoretical, methodological, archaeological, and historical frameworks necessary for a study of the Cusco regional community through time. Four additional chapters follow, which present new archaeological data from Minaspata situated with reference to concurrent patterns in the larger region. A final, concluding chapter serves to synthesize the research discussed in this dissertation.

Chapter 2 presents an argument for treating states, communities, and other social entities as assemblages. I begin by discussing recent theoretical approaches to understanding pre-modern states, which have arisen out of the increasing critique of social evolutionism throughout the past few decades. However, while these approaches have significantly advanced our understanding of complex polities in the past, most have not managed to circumvent the problems and contradictions of neo-evolutionary theory. This is because these problems are inherent to the ontological framework of Western modernity. I suggest that approaching states relationally – that is, as assemblages – provides a path forward. Treating states as assemblages means framing Inca state
formation as the emergence of sovereignty, reproduced through hegemonic projects, which are drawn from pre-existing assemblages of regional and local community. As a result, understanding the historically individuated form of the Inca state means tracing the history of these community configurations at multiple scales over the *longue durée*. I end this chapter with a discussion of how analyzing consumption patterns can enable us to address questions of regional community formation and state emergence from an assemblage-based perspective.

Chapter 3 traces the archaeological history of the Cusco region, summarizing research conducted by other scholars and establishing a context to situate new data from Minaspata. The first half of the chapter discusses the historical patterns observed in different parts of the Cusco region for each major chronological period leading up to the emergence of the Inca state. The second part of the chapter concentrates on the smaller scale of community – that of Minaspata and other sites in the Lucre Basin. This discussion draws on decades of archaeological research, much of which is concentrated on patterns and events during the Late Intermediate Period and Late Horizon. I also draw together disparate references to the Muina, the ethnic group who most likely composed the community of Minaspata, which are found in various ethnohistoric chronicles and court documents dating to the early 17th century.

Chapter 4 covers the methodology which I employed in conducting this research. I discuss site selection criteria and the research questions which an investigation of the long-term culture history at Minaspata can address. I also discuss excavation methods,
collection strategies, and the procedures undertaken to process and analyze the material remains recovered from the site of Minaspata through excavation.

Chapter 5 turns to a detailed summary of the results of excavation. The first part of the chapter reviews the stratigraphic sequences and features found in each excavation unit, as well as the strategy behind the placement of each unit across the Western Sector of Minaspata. The second part of the chapter synthesizes the developments and cultural phases at Minaspata by period, tracing the historical development of the site through time. I end the chapter by briefly summarizing the results of previous unpublished excavations at Minaspata and their relevance for the results of the 2013 Minaspata excavations, followed by a discussion of the implications of these new data for the community at Minaspata and for the region as a whole.

Chapters 6, 7, and 8 provide a detailed examination of consumption patterns at Minaspata. Chapter 6 does this through an analysis of the ceramic assemblages recovered during excavations. Alternating between a consideration of the pottery of the larger region, and an analysis of the trends revealed by ceramic styles, vessel forms, sizes, and fabrics at Minaspata for each period reveals patterns of exchange which acted to entangle different communities more closely together. The analysis also indicates a pattern of feasting beginning in the Early Intermediate Period, which escalated in scale and intensity through the end of the Late Horizon, establishing historical key elements of sociopolitical life which eventually formed a critical component of the practices of Inca sovereignty.
Chapter 7 addresses the question of consumption more directly, by turning to the analysis of the macrobotanical and faunal collections from Minaspata. These patterns suggest an increasing focus on the exploitation of camelids, maize and guinea pigs through time, which varies in different periods. These data correspond well to trends indicated by the ceramic assemblage, complementing an interpretation of the increasing importance of feasting at Minaspata through time. Chapter 8, the last of the data-rich chapters, focuses on the patterns of long-distance exchange through an examination of the sources from which obsidian at Minaspata was obtained.

Chapter 9 concludes this dissertation, synthesizing the data explored in each chapter and the implications for the emergence of the Cusco regional community and the Inca state at multiple scales. I discuss the sociocultural, political, and material patterns through each period of time and how these materials acted to bring together the regional community through relations of affect and interaction at various points, and how they contributed to the hardening of local community boundaries at others, serving to destabilize the regional community. The establishment of Wari colonies in the Cusco region, and the subsequent collapse of these colonies, had significant long-lasting effects on the assemblages of community at both local and regional scales: these events set different areas of the Cusco region on different social and cultural trajectories, while simultaneously introducing new elements that acted to maintain and strengthen bonds of regional community during the Late Intermediate Period through shared historically durable sociocultural frameworks and mutually recognizable ways of expressing and performing local political authority. Ultimately, the Inca state emerged by establishing a
claim of sovereignty over this coherent, self-recognizing public, drawing on pre-existing sociocultural and material practices and converting important places in ways that were intelligible to local communities. I conclude by observing that treating communities, states, and other social entities as assemblages leads to a richer understanding of the past, and the critical role that efficacious and vibrant materials play in the contingent and open-ended processes of history.
CHAPTER 2

ASSEMBLING THE STATE OVER THE LONG TERM:
ASSEMBLAGE THEORY, SOVEREIGNTY, AND REGIONAL COMMUNITIES

In this chapter, I will discuss theoretical problems with earlier models of state formation that have been used to discuss the Inca state, and propose that conceptions of society based on the concept of relationality – in particular, assemblage theory (Deleuze and Guattari 1987; DeLanda 2006, 2016; Bennett 2010) – can address many of these issues. Reconceptualizing states through a relational lens allows us to approach them as real but open-ended configurations of heterogenous components which operate simultaneously at multiple scales, and suggests several possibilities for future investigation of particular, historically situated complex polities. I will argue, following Bruce Routledge (2014), that the constitution of political sovereignty (Smith 2011, 2015) requires ”assembling” components drawn from existing sets of sociocultural, political, and material relationships, transforming them in the process. Material and non-human components are critical to this process

These sets of relationships are formed over centuries or millennia of sociocultural practices and relationships, involving heterogeneous sets of human and non-human actors (or ‘actants’) interacting through a given space, and coming together to form a regional community united by shared cultural and cosmological frameworks for understanding the world. The formation of this regional community over which a claim to political sovereignty can be made - the theoretical subject of this dissertation – is a necessary
component to state formation, and can be examined through the material processes of consumption. Investigating this process over the long-term is critical to understanding the particular historically contingent forms and expressions that any given complex polity may take.

**The Contemporary State of State Theory**

Since the eighteenth century, political theory has usually addressed collective politics, complex polities and large-scale political domination under the category of the State. Most of the sustained theoretical work on the state in archaeology – and indeed, political complexity in general - has been within the framework of social evolution (or neo-evolution) (Cohen 1978; Flannery 1972; Fried 1967; Johnson and Earle 1987; Sahlins and Service 1960; Service 1962, 1978; Wright and Johnson 1975). While the collective body of work within this theoretical model is extensive and indeed quite diverse, a foundational tenet unifying neo-evolutionist theory is that different societies exist at different levels of complexity and correspond to ideal types defined by key traits across time and space (for example, Bands, Tribes, Chiefdoms, and States) (Sahlins and Service 1960). Societies at one particular stage in this evolutionary development will tend to progress from a lower level to a higher level of complexity, assuming that external factors (such as climate change, environmental degradation, or colonial encounters) do not intervene, along predictable –if broadly defined – pathways and through similar sets of adaptive processes and stimuli.
Social evolutionary theory has been subject to vigorous critique within archaeology over the last 30 years, particularly with respect to the State concept (e.g., Chapman 2003, 2007; McGuire 1993; Pauketat 2007; Smith 2003, 2011; Yoffee 1993, 2005). While fully delineating these critiques is unnecessary and beyond the scope of this chapter, they tend to cluster around a set of similar issues. First is the problem of definition. As data accumulated throughout the 20th century, the level of variation in past and contemporary human societies stymied simple classificatory schemes (Sanders and Webster 1978; Wenke 1981; Yoffee 1979, 1993), leading to a proliferation of state “types” (Feinman and Neitzel 1984). More profoundly, however, is that the idea of a universal social form which can be defined through characteristics or attributes leaves significant room for definitional instability, in terms of what the key attributes are. If the State is defined too narrowly, as the formal offices and institutions of government, the socially embedded nature of state power is ignored. Defined too broadly, as an encompassing social system, the real limits and discontinuities of state power disappear from view (Routledge 2014:2–3).

Furthermore, the act of defining the State concept through ignoring variability in time and space in favor of ideal types or “blueprints” is inherently reductive. The uniformity of the State concept denies the contingent effects of history, designating variability in form and institutional structure as epiphenomenal (Chapman 2003:88–100; Pauketat 2007:133–162), while simultaneously masking class and gender distinctions (Patterson and Gailey 1987; Paytner 1989; Pyburn 2004; Voss 2008), factional competition (Brumfiel 1992), and heterarchical arrangements of power (Crumley 1995;
Ehrenreich et al. 1995). The concept of the State also ignores the discontinuous, spatial reality of complex polities, and the way that political power is irregularly distributed (Smith 2003, 2005). In addition, the universal social trajectories inherent in neo-evolutionary theory are oriented towards the apex of complexity, making them essentially teleological and ahistorical in general. This directionality towards increased complexity in neo-evolutionism is actually non-evolutionary, in a Darwinian and historical sense, which considers evolution as random and contingent (e.g., Dunnell 1980; Leonard and Jones 1987).

Ultimately many of these problems stem from the proposed unity or totality of the state across time and space, and its totalizing reconfiguration of society. The State becomes reified as a thing itself, reducing the institutions and practices which compose any particular complex polity to “essential” parts defined solely by their relationship to the State. However, despite these critiques, which have increased in intensity even as their subject has withered, what has happened in the last 30 years is not the shattering of the unitary state concept. Rather, treatments of large-scale political formation have let the State, or something like it, sneak back in.

Many analyses of early complex polities have rightfully called for a shift from definitional questions of the state concept to questions of what states do (practices and effects) and how they produce and maintain dominant social, political, and economic relations (see Campbell 2009:823; Cooper 2010:88; Porter 2010; Smith 2003:102). A focus on the mechanisms of political economy has long been particularly salient in this pursuit (e.g., Baines and Yoffee 1998; Bauer 2011; Bauer et al. 2007; D’Altroy and
Hastorf 2001; Dietler 1990; Earle 1997, 2002; Earle and Smith 2012; Feinman and Nicholas 2004; Hirth 1996; Johansen 2011; Kehoe 2006; Martindale and Letham 2011; Smith and Schreiber 2005; Stanish 1992; Stein 1998). However, these appear to leave the category of the state largely unquestioned even as they pursue particular practices, without exploring how the subjectivity of state-ness is constituted.

Other approaches that position the state as a fragmented network of discontinuous power nodes (such as network approaches) or those that focus on analyzing the state as a series of individual transmissible traits (such as Darwinian evolutionary approaches) substitute a totalizing perspective for an atomistic one. These approaches fail to reflect on how complex polities cohere and persist when constituted by a latticework of distinct nodes. In addition, even when the state is disarticulated in this manner, similarly problematic categories – such as human groups and organizational levels – are used as already given, stable and unproblematic entities (Routledge 2014:12-14).

While the dominant theories of Inca state formation in particular (Bauer 1992; Bauer and Covey 2002; Bauer and Smit 2015; Covey 2006; Hiltunen and McEwan 2004; McEwan 2006; Rowe 1945) (Chapter 1) avoid the worst excesses of neo-evolutionary theory by situating their explanations of Inca state formation in specific and historical processes (albeit different ones), the Inca state is still seen as a coherent totality which emerges fully formed as a particular historical event. This formation is ultimately the result of processes of economic intensification, demography, and elite maneuvering. The result is a conception of the Inca state as a singular thing whose existence and form is given in the mechanism of adaptation and exploitation, and which firmly embeds the
conditions for consequential action, and its motivation, into transhistorical metastructures.

These formations seem to engender the attitude that states make themselves in the right conditions (especially warfare and overpopulation), and once made, they stay made until they are overextended and collapse. This views is partially due to the enduring residue of the foundational conceit of social evolutionism: that the world may be understood under the rubric of a unified law of social change, discovered through the reduction of variability in pursuit of universal processes (Smith 2003:34). It is a theory of the shape, pace, and direction of time and history, but one that is predicated on a conception of human social organization as driven by deep and fundamental psycho-social imperatives innate to humans and thus outside of the realm of history. Social evolution might move at different rates in different parts of the world, but the shape and mechanisms of history are universal.

This is ultimately a necessary recourse in a reality constituted by bounded entities of all types (objects, organisms, human subjects, communities, societies, and so on) whose nature is defined by reified essences. This worldview is not limited to neo-evolutionism or state theory, or even archaeology in general, but is foundational to Western thinking. In other words, we have not managed to move beyond the language and concepts of neo-evolutionary theory, despite advancing beyond its initial analytical objectives, because such language and concepts depend on the ideas of coherent bounded totalities defined by reified essences inherent to the ontology of Western modernity (Thomas 2004).
This ontology has its roots in the dualistic thinking formulated during the Enlightenment, which divides up the world into opposed dualities such as nature and culture, subject and object, human and non-human, and so on (e.g., Jones and Alberti 2013). Most notably, one particular way of thinking about the world is taken to be universal and universally true. It also separates the human subject from plants, animals, things, and other entities which make up the world – not merely as a subject of analysis, but as something radically different in kind. People are implicitly viewed as ontologically distinct from every other element of reality; even some studies which recognize the constructed nature of human beings in the world privilege social practices and relationships. This humanist focus, in turn, reduces the real efficacy of material things and other non-human entities to merely representational. What matters is not the material character of the world, but the understandings that humans had of it. The result is a deeply impoverished view of the past and the development of human history.

The deeply embedded nature of this thinking in archaeology has been evident throughout the major disciplinary paradigms, which primarily differed over the role of and emphasis on nature vs. culture in understanding the past (Harris and Cipolla 2017). A related issue is that of time and change (i.e., Crellin 2014, 2017; Lucas 2005, 2012; Robb and Pauketat 2013a). Human processes (such as agency) are seen to operate in the short-term, over the scale of years or decades; intergenerational processes - such as the formation of complex polities, the accumulation of wealth and class formation, social categories and traditions - operate in the medium-term, rising and falling over centuries; meanwhile, the long-term is confined largely to environmental and climatic processes.
The issue is not necessarily with the division of these, but with the incommensurable nature of the scales of time: processes operating on different scales do not (and cannot) interact, except perhaps in a downward fashion (for example, climate change and environmental degradation affecting medium and short-term scale human processes). The result is that regardless of the scale of our analyses – whether in the “ethnographic slice” of daily human life, or the long term environmental and climatic factors – the final result is inevitably reductionist.

**Relationality as an Ontological Realignment**

These issues cannot be circumvented without a fundamental realignment of the ontological position within archaeology. Several relational approaches have recently come to the fore in archaeology and social theory more generally. With many different names which overlap considerably in their approaches, all seek to challenge any notion of pre-existent fixed substances or essences. In relational approaches, the modern Western ontology of “mind” and “matter” gives way to relational ontologies, and essentialist “objects” and “subjects” give way to identities, persons, and entities in which dividing lines are not pre-drawn (see Alberti et al. 2011, 2013; Harris and Cipolla 2017; Watts 2013). As a result, humans and human relations are not privileged *a priori*, but instead all things – persons, plants, animals, places, societies, and others – emerge from

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relations resulting from heterogeneous interactions, and only exist within the context of those relationships.\(^4\) This perspective stands in sharp contrast to the view that entities have an essential nature, independent of the world around them (Jones and Alberti 2013).


This approach also recognizes that the entities and forces involved in any specific event have a history, and that past relationships that shaped those entities or forces affect that event. Further, any enduring entities that emerge from the event are legacies of past relationships, just as they consist of and are situated within present and ongoing relationships, affecting and shaping future events (Fowler 2013:2). Linked to this is a

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\(^4\) Much of this research has been inspired by the seminal ‘actor-network theory’ (ANT) by Bruno Latour (1993, 1999, 2005) and “perspectivism” by Eduardo Viveiros de Castro (1998, 2004, 2012), as well as by the work by Henare and colleagues (2007) but has morphed into a multitude of different relational approaches. See Alberti (2016) and Witmore (2014) for further discussion on the influence of these and other scholars on archaeology.

\(^5\) See Alberti (2016), Fowler (2013, especially Chapter 2), Harris and Cipolla (2017), Jones and Alberti (2013), and Watts (2013) for excellent discussions on these different but related approaches.
posthumanist critique of reducing explanation in the social sciences to human factors, and the representationalist perspective in which an interpreting subject perceives the world filtered by meaning and culture, creating a mental abstraction of the world which only has significance to the subject when converted to meaningful symbols (Harris 2018; Jones and Alberti 2013:18–22). Recent relational approaches attempt to resolve this by treating the non-human world as significant beyond its relationship with humans – as efficacious, vibrant, meaningful, or affective in its own right (e.g., Bennett 2010; Ingold 2011; Witmore 2014). Such perspectives grow out of the insights produced by materiality studies (e.g., Boivin 2004; Dobres 2000; Fletcher 2004; Gell 1998; Gosden 2005; Hurcombe 2007; Jones and Boivin 2010; Jones 2004; Meskell 2004, 2005; Miller 2005; Pickering 2010; Thomas 2005), but these have been critiqued as human-centric (i.e., material things are only important for the ways in which they act as intermediaries of human social relations) and for the constructions of “material” or “secondary” agency that blur the boundaries of different ways in which humans and non-humans affect the world around them (e.g., Alberti and Bray 2009; Ingold 2007; Sillar 2009).

Latour’s notion of “actants” (1999:303, 2005:54–55) resolves this latter issue to some degree. An actant is something which has the capacity to act and be effective within a given interaction, whether or not we accept them as agents with intentionality. Anything can potentially be an actant: a human being, an idea or belief, an object, a bacterium, a substance, a bar of music, a place. All that is required for something to be an actant is that it has an effect on something else. For Latour, agency is not confined to particular entities (such as humans) nor is it defined by particular qualities or essences.
Rather, agency is distributed from the interactions of specific networks of actants. The notion of a society composed of networks of actants is Latour’s most influential idea, but has been subject to a sustained critique from several directions (e.g., Alberti and Bray 2009; Alberti and Marshall 2009; Fowler and Harris 2015; Harman 2009; Hodder 2012:93–94; Ingold 2011; Wallace 2011:118–119). Nonetheless, I consider the notion of “actants” to be extremely useful and will use it in further discussion below.

Relationality creates an understanding of the diverse past in which personhood is not limited to (nor arises naturally from) individual humans; places are neither solely physical nor social constructs but arise from interactions between both; and society is impossible without mediation through the material world. Ultimately the goal of relational approaches is to move beyond understanding the past in terms of bounded entities and totalities which fall neatly into binary opposed categories, such as nature/culture, subject/object, mind/matter, and human/non-human. In doing so, relational approaches acknowledge a different basis for how interpretation works, and in a sense, presents a distinctive interpretative method (Lucas 2012).6

Ultimately, questioning the ontological foundations in archaeology is a way to take a step back, to inquire about the constitution of the subject before emergence, rather than assuming that it is constituted in natural and identical ways across time and space (Jones and Alberti 2013: 30). Rather than ignoring the human as a subject of inquiry, this perspective resituates the human subject as no longer fundamentally different and removed from the processes which govern the rest of reality, before analysis of the social

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6A full discussion of how relational perspectives change the interpretation and methodology of archaeology is beyond the scope of this chapter, but see Fowler (2013a, 2017) and Lucas (2012).
and cultural world even begins. Similarly, relationality posits that all entities (human and otherwise) are constituted by relationships that do not depend on human subjectivity supplying differences of perspective (Fowler 2013a:62), which is merely one of several dimensions that must be studied to understand reality. However, we still have much to learn about humanity by studying other ‘components’ in the unfolding relations foundational to both humans and non-humans, because what humans are and how we act depends on the phenomena in which we are immersed. Rather than antihuman, this perspective highlights a more complete human (Olsen 2010:139).

**Assemblage Theory**

Within the larger body of relational approaches to studying the past, assemblage theory is the most useful for the purposes of understanding state formation processes over the long term. Assemblage theory explains how any entity we study can be seen as an assemblage which emerges from certain relationships. The properties of entities are relational rather than fixed – that is, they emerge as a product of interactions, rather than being inherent (or essential) to the entity – and some features of these assemblages endure even when others change. Most importantly, all assemblages are real, in that they can act and affect the world around them. As a result, assemblage theory provides a deeper understanding of social and political configurations, their relationship to humans and the non-human entities with which we interact, and is furthermore exceptionally well-suited for dealing with phenomena on multiple levels of scale, space, and time.
The concept of assemblages was originally developed by Gilles Deleuze and Felix Guattari (1987) to understand contemporary social phenomena such as the modern State, but has been extended into a broader understanding of reality as composed of various features (entities, forces, processes, and so on) by scholars including Manuel DeLanda (1997, 2006, 2010, 2016) and Jane Bennett (2004, 2010). Assemblage theory has also begun to be explored in archaeology recently, although is by no means dominant (see Hamilakis and Jones 2017).

For Deleuze, assemblages are “compositions that act” (Due 2002:132), and have specific shapes and constitutions. They are charged, ordered entities arising from complex histories of interaction (Fowler 2013a:22). The entities composing assemblages can be more or less heterogeneous, and can include humans, animals, plants, things, architecture, and so on. However, they also include – on the smallest scales – the particles composing atoms, which themselves form components of assemblages of molecules, and so forth; to the largest scale of populations and assemblages of forces, matter, and spaces that form galaxies (Barad 2007; DeLanda 1997, 2010). Like all relational approaches, the concept of assemblages is rooted in a flat ontology (DeLanda 2002), permitting powerful actants to emerge from the relations and interactions which bind entities together into assemblages, rather than assuming which actants (such as humans) are more impactful and affective prior to analysis. This flat ontology is a critical component of assemblage

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7 While not completely synonymous with Latour’s “actants,” assemblages are interchangeable to a degree, since both can be defined as compositions that act.

8 While heterogeneity of the components is an important characteristic of assemblages, DeLanda takes heterogeneity not as a constant property, but as a variable that may take many different values within any given assemblage (2006:11).
theory, and indeed of all relational approaches, because it means that human and non-human actants (including, but not limited to, material things) act on the same plane of material reality. The social world, the natural world, and the world of things are the same world.

All things are assemblages, composed of other heterogeneous assemblages, but are not reducible the constituent parts (DeLanda 2016). They also form constituent elements of larger-scale assemblages, and may simultaneously compose multiple interlocking assemblages. This means they are multiscalar - that is, assemblages exist on many different levels, all operating and acting simultaneously. The image of reality created by this approach is a world in which assemblages branch out in many different directions at many different scales, interweaving with a potentially infinite number of other configurations and entanglements and entities; the boundaries of any given assemblage in such a world is nearly impossible to clearly distinguish and depends partly upon the scale under examination.

The constituent parts of any assemblage are self-subsistent and articulated by relations of exteriority (DeLanda 2006, 2010). This means that parts may be detached and made components of other assemblages (in which the interactions are different) without destroying the assemblage it was a part of. As a result, changes can take place without assemblages ceasing to exist as real historical actants (although they may be transformed). The components can also act by becoming entangled in other assemblages

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9 The relations of exteriority which define assemblages is a concept in opposition to the relations of interiority that characterize Hegelian totalities (DeLanda 2006:9-10). Totalities are bounded entities, structured in manners metaphorically similar to organisms: that is, the parts of a totality are only defined as
without fully detaching, creating new relational configurations with different emergent capacities that can expand assemblages in time and space. The result is a world in which all entities are open-ended and constantly changing to varying degrees. Relations of exteriority are critical to understanding assemblages, as this concept allows for locality, variety, and contingency, but also permits actants to effectively move in both time and space, allowing for durability and translation (Crellin 2014:147).

The effects, properties, and capacities for action of different entities are not caused by any one of the components, but out of their specific interaction, and the continued existence of the assemblage depends on the emergent properties of all its parts (but, importantly, is not reducible to them). As a result, the properties of the component parts can never explain the relations which constitute a whole, because they are not the result of a simple aggregation of the components, but of the actual exercise of their capacities to affect and act (DeLanda 2006:11). In other words, the capacity of all actants in the world to affect change is constituted within, rather than prior to, networks of entanglement and interaction. The emergent possibilities only reveal themselves within the specific relational networks and assemblages.

As a result, the properties of the whole are not transcendent, but immanent: the wholes exist alongside their parts, and are only continually produced by the recurring interactions between their parts. The emergent and causal properties of the whole would real with reference to the whole, and cease to have meaning or identity if detached from the whole, since being this particular part is one of its constitutive properties. Such a construction has difficulty fully explaining change and emergent, unpredictable properties of the whole, since all the parts are bound together into a seamless web which trends towards homeostasis, and the possibility for unanticipated change in the absence of external factors disappears.
cease if the parts ceased to interact (DeLanda 2006, 2010:5; 2016:13). To demonstrate this point with rather imprecise, but simple, example: if we consider a particular society to be an assemblage, society only can be said to fully collapse if the components (the most obvious of which are people, but also include institutional and material components) stop interacting. The collapse or detachment of a particular social institution would not lead to the total cessation or collapse of that society, but it may be transformed depending on the scale and position of the particular component.

This implies that assemblages are compositions that act back on their constituent parts, even though they do not totally define them. Because larger-scale assemblages exist and act alongside their component entities, they can affect other assemblages at a similar scale as well as their components, even as changes in the relations between these smaller-scale components affect the capacities and properties of the whole entity. Although emerging from the interactions between their parts, once an assemblage is in place, assemblages immediately starts acting as a source of limitations and opportunities for its components – a phenomenon DeLanda terms downward causality (2016:21).

Although the boundaries of assemblages change, all assemblages – inorganic, organic, or social, regardless of scale or composition – have an ontological status of a

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10 Detachment of one of the components of an assemblage would not necessarily lead to the failure or collapse of the entire whole (although it may), as in the case where the parts were linked together by relations of interiority (Footnote 5). The assemblage only ceases to exist if the parts were to stop interacting. However, the detachment or collapse of a component actant may lead to significant transformation of the whole, depending on the scale of the assemblage under analysis.

11 This is why we can discuss the collapse of particular complex polities or social configurations, but describing societies as ‘transformed’ in most cases is more accurate (e.g., McAnany and Yoffee 2010).
singular, historically contingent individual entity. In fact, all that exists is historically individuated entities at different scales. Thus, we can assert that they have objective existence independent of human conceptions of them, without any commitment to essences or reified generalities (DeLanda 2006:40, 2016:16–17). While generic categories or ideal types like “the market,” “the State,” “society,” and so on have no place in assemblage theory, specific and actual examples do (Harris 2016b:26). Assemblages of all kinds have objective existence because they can causally affect the people and other entities that are their component parts, both limiting and enabling their capacities to act and affect the world around them, and because they can causally interact and affect other assemblages (DeLanda 2006:38, 2016:13-14).

The non-human and material actants in any assemblage play critical roles in the emergence of the wholes and their causal properties and qualities. The material world has a kind of agency, or efficacy (see below), in that the qualities and affordances of different configurations of matter shape how humans relate to, and through, these different non-human entities (Bennett 2010:31; see also Latour 2005). For example, the specific qualities and properties of different plants and animals make an obvious difference to the cluster of properties, discourses, and identities linked to them, even as the forms they take as social actants only emerge through the interaction between their physical and material

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12 Deleuze and Guattari describe this with the term *haecceity* (1987:287-289).
13 This includes entities, such as archaeological categories or typologies, which may be considered by some to impositions of the analyst onto the material record: they are ontologically real as well (e.g., Lucas 2012). However, that does not necessarily mean that assemblages which emerge in the modern day through interaction with archaeologists, museums, and so on, correspond perfectly to the past assemblages in which the material remains were implicated.
properties with cultural symbols, values, and meanings of people.\textsuperscript{14} While the actions and effects of larger social entities – such as communities, cities, and states – are sometimes expressed solely in terms of the action of the humans who compose them, this ignores the effects of larger emergent assemblages in providing direction, motivation, and constraint to their actions. People build infrastructure, produce material objects, organize and keep track of populations, and enact violence and go to war. But the qualities and capacities of non-human assemblages enable them to do so, and constrain them in doing so in particular ways. Society is literally unimaginable without them. In addition, larger-scale emergent entities – for example, institutions of rulership, pride and association with towns and communities, understandings of cosmological and political order, the symbolic and physical violence which contains people to certain social and economic roles – often provides the direction and motivation for these collective actions, and the structures and potential forms they may take. The structuring properties of these emergent wholes are then reproduced by the recurrent interactions of these various components, which include material and non-human entities. This causal efficacy, operating at multiple scales and temporalities, is why we can argue that all assemblages have ontological reality and cannot be explained by reduction to their individual parts.\textsuperscript{15}

\textsuperscript{14} Smith (2015: 50) notes that efficacy denotes more than just the unique physical mechanics of things (for example, how a dam holds water), but how they act through these mechanics and physical qualities to affect assemblages around them (how the capacity of a dam to hold water creates political authority in one sociohistorical moment and not another).

\textsuperscript{15} While this description in some ways bear a resemblance to the relationship of practice and structure as construed in practice theory (Bourdieu 1977, 2003) and structuration theory (Giddens 1984), assemblage theory is not merely a reiteration of these earlier formulations. Structuration and practice theory (as originally constituted) apply only to social forms, and the material world is generally viewed in terms of how it structures human behavior. In addition, assemblage theory treats these larger-scale entities as open-
Understanding assemblages requires describing two other features: the processes which characterize assemblages, and the nature of the relations which bind entities together and create emergent wholes. First, assemblages can be characterized along two dimensions; processes of territorialization and deterritorialization, and the degree to which components play material or expressive roles. Territorializing processes are those which act to create stable entities and homogenize the properties of component parts.

Territorialization refers not only to the determination or sharpening of spatial boundaries as a whole – as in the territory of a community, city, or nation-state – but also to the degree to which an assemblage’s component parts are drawn from a homogeneous repertoire, or to which an assemblage acts to homogenize its own components (DeLanda 2016:22–26). Processes which act to destabilize the boundaries, or increase the heterogeneity of an assemblage’s components, are referred to as deterritorialization. One and the same assemblage can (and often does) have components working to stabilize its identity, as well as components forcing it to change, or even transforming it into a different assemblage (2006:12).

Some territorialization processes act to consolidate the effects of assembling, further stabilizing the identity of assemblages through purely expressive components,

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ended and emergent; by contrast, structuration and practice theory considers agency and structure as a seamless whole, mutually constituting each other dialectically and bound through relations of interiority. According to these theories, structure is primarily reproduced through deeply embedded and unconscious habits and beliefs engrained in individuals through repetitive practice. As DeLanda explains, structure is conceived as consisting of behavioral procedures and routines, and of material and symbolic resources, neither of which possesses a separate existence outside of their instantiation in actual practice (2006:9-10). Following this logic, because structure does not have objective existence outside of the minds and actions of human beings, it can have no causal efficacy on the people who produce it. This is obviously not the case; assemblage theory addresses this contradiction by treating structure as sets of different historical and ontologically real assemblages which act to territorialize sociocultural norms (see next paragraph).
such as words or material entities laden with meaning. These specialized expressive entities are described as “coding” processes by DeLanda (2006:15).\textsuperscript{16} For example, coding processes may act to explicitly define or codify boundaries or criteria of inclusion and exclusion. When assemblages arise, the elements are territorialized and/or codified through the processes that produce it (Fowler 2013a:22), and the continual reiteration of these territorializing processes are necessary to maintain the identity of an assemblage once it has emerged (2006:12–14).

These two kinds of processes are always in action: assemblages are never fixed, but always becoming, subject to competing forces of territorialization and deterritorialization.\textsuperscript{17} This means that the configurations of relations can grow and change. However, these kinds of processes should not be understood as ontologically distinct from, or external to, the relations and interactions which create assemblages in general.

The other dimension which characterizes assemblages is the degree to which components play material (physical) or expressive roles. These roles are variable, ranging along an axis from a purely material role to a purely expressive one, as well as mixtures of the two (DeLanda 2006:12; Deleuze and Guattari 1987:556). Expressive components include things like words, gestures, meanings, metaphors, values, symbols, and so forth as particular qualities of assemblages that emerge from the interactions of its

\textsuperscript{16} Although DeLanda frames the coding processes in social assemblages as primarily discursive and linguistic, I would expand this to be semiotic, in a Piercian sense, bringing in the role of materials and objects which are intentionally mobilized for stabilizing and homogenizing assemblages, particularly in prehistoric and non-literate contexts.

\textsuperscript{17} Deleuze and Guattari (1987) refer to these as ‘lines of becoming’ and ‘lines of flight,’ respectively.
components. However, material and non-human entities are also components, potent actants in their own right, and are efficacious without needing to rely on human subjectivity for interpretation. As a result, our analyses can include meaning, identity, or emotion, but we must avoid reducing material components to mere representations of mental templates and cultural meanings, or to things that simply fulfill human biological and adaptive needs.

Of course, material entities can do these things, but these are merely some of their potential capacities to act, and they may do many things simultaneously.\(^{18}\) The intermediate material-and-expressive role that components may play in assemblages means that things and objects are necessarily “more-than-representational” (Harris 2018:91). Semiotic representation of material or environmental entities and features is real and does occur, but is an emergent property or capacity of material (and expressive) entities out of interactions with other entities or assemblages. Things only represent in entangled relations with other assemblages of things, places, people, and meanings. However, as discussed above, the materiality of these non-human entities also matters, as the physical characteristics of objects affect and constrain (to variable degrees) how objects are used, their durability and persistence, and the ways in which they draw other relations and assemblages to them.

The other feature of assemblages left to address is the nature of the relations which constitute entities of all kinds. These are relations of affect. Affects are the

\(^{18}\) For example, the same pot can contain food and beverages, serve as an indexical marker of status and identity, and act as a critical component in ritual performance. Which of these capacities is emphasized or actualized at any given time only emerges relationally, depending on which other components the pot is interacting with.
engagements with the world associated with all forms of substance (Spinoza 1996); they are, broadly speaking, any way in which an entity can affect other entities or be affected by them, and manifest as any emergent, contingent, relational property of an entity (Fowler 2013a:35). Assemblages act, and become effective assemblages through their actions (including with and within other assemblages), but the potential for an entity to be an effective agent depends on the relations of affect with other entities in any given situation (ibid).

Affects are not limited to the domain of humans, but include the physical and chemical forces through which matter coheres, decays, and affects other matter (Barad 2007). However, affect can also register as emotions and desires experienced by human beings (and potentially animals) (Harris 2012:91); they include the way in which “boundaries are drawn and crossed, emotions felt and expressed, and the way in which a room can have an atmosphere that you feel rather than read or know” (Thrift 2008; in Harris 2016a:203). While investigating the role of emotions in archaeological contexts involves clear epistemological difficulties, this does not mean they are unimportant and should be ignored (Hamilakis 2013, 2017; Harris 2012; Harris and Sørensen 2010), as their effects leave material traces and they are critical to understanding how assemblages emerge and persevere.

The way in which affects emerge as material bodies of all sorts interact has been termed an “affective field” (Harris 2016a:204; Harris and Sørensen 2010). Material things emerge within affective fields to become “sticky” with emotions, memories, and residues, and transfer particular sensations between different contexts. As fundamentally
relational, working in the conjunction of people, places, and things, affective fields are the emergent outcomes of particular interactions and assemblages. Oliver Harris describes how particular forms of material culture, such as pottery (2012:91) or architecture (2016a), repeated in form and style across wider regions and moving between different sites created particular kinds of affective fields between them, making a scale of community manifest in daily life. People felt part of a larger community whenever they used a style of pottery, or lived in a type of house, and this feeling was generated with and through this material culture. The pottery here is not only the symbolic or representational referent for the imagined community, but an active member of communities that operated at multiple scales, through the way it disclosed affective relations (Jervis 2013; Thomas 2010). In other words, a specific historical instantiation of community would be impossible without the material actants which formed it, in conjunction with people and places.¹⁹

Defining assemblages as sets of components linked by relations of (affective) exteriority emphasizes the capacities of assemblages to affect and be affected, as opposed to grouping them based on typological or other external similarities of the components. Various relations among constituent parts may be sequential, hierarchical, integral to, or dependent on other relationships. The assemblage is not a complete system, and does not

¹⁹ However, affect – as an intentionally broad term – should not be limited to describe the emotional or desirous aspects of human-material interactions, but can be used to refer to any such forces and relations which link and entangle entities, including the myriad physical and chemical forces which bind together particular forms of matter or sustain biological organisms (Bennett 2010:34). This example was chosen primarily because, within the context of the subject matter of archaeology, articulating how humans and non-humans can become entangled not only through relations of need and representation, but also emotion and affective fields, can enlighten how communities at all scales emerged and persisted throughout human history.

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arise out of any singular organizing principle or point of origin, but is a series of intersecting forces, entities, practices, and/or processes (DeLanda 2016).

**Scale, Time, and Change in Assemblage Theory**

Assemblages are multiscalar through time and space; all entities are simultaneously operating at multiple scales on the same plane of reality (McFadyen 2008). A single object is simultaneously an assemblage and a material and expressive component of countless other assemblages operating and multiple scales and changing at different rates. These are all present within the material fabric of the object, yet stretch out through time and space in different ways (Harris 2017:133). However, the relationship between scales is not one involving Euclidean notions of space and time, nor are they hierarchically situated (although some can be) (DeLanda 2006), but are rather topological, or folded, interweaving within a single entity. In this sense, assemblages exist in multiplicities; they are always in the processes of becoming something else, because any entity can potentially be entangled in many overlapping and intersecting assemblages (Fowler 2013a:25). This means that terms like micro-scale and macro-scale are not absolute, but relative to a given assemblage.

The relational nature of assemblages means that new entities come into being through the reconfiguration and joining of previously existing assemblages. Understanding the emergence of new configurations means tracing the genealogies of existing assemblages as a historical process (DeLanda 2010:6; Robb and Pauketat 2013a). To understand how some configurations were assembled, we must go back and
trace the developments and histories of individual components to understand how their particular roles, associations, and participation in other assemblages led them to be brought together.

We also have to understand how processes operating on these different scales of time intersect and interact – a long-standing problem in archaeological theory. Following modern Western ontological thought, archaeology has typically seen change through ideas of chronology - as unfolding across a backdrop of unilinear and uniform time, progressing forward as steadily as the earth revolves around the sun. Although the past may change at variable rates, it implicitly progresses in a single line towards greater complexity. Change in human history is characterized by long periods of stasis interrupted by rapid moments of transformation, reconfiguring certain sets of characteristics that differ drastically from what came before and that which comes after (Crellin 2014, 2017; Lucas 2005, 2012). Such a view encourages us to seek grand and singular causes for these major transformations.

This, in turn, creates a situation in which processes operating at some temporal scales are privileged as explanations for change, while others are ignored or dismissed as epiphenomenal. For example, is sociopolitical complexity best explained as the result of human agency, operating in the short term? As a result of contradictions inherent within a given social order, operating in the medium-term? Or is it best explained as a result of material and environmental factors, operating primarily in the longue durée? The result of these contradictions is an inevitably reductionist and impoverished understanding of the past.
Broadly speaking, the dialectics of archaeological paradigms can be interpreted as a shifting argument over which scales of time are most important for understanding human history. Processual archaeology, with a focus on homeostatic, adaptationalist cultural systems, generally situated sociocultural change as a result of large-scale and long-term processes such as demography or environmental determinism. Such explanations rendered human agents and social practices invisible. Responding to a range of concerns now generally acknowledged as valid, postprocessualists generally ignored the issue of long term change, focusing instead on immediate, local, and experiential scales and viewing social change in an ethnographic framework in which personal intention and individual action were the focus. While the archaeology of the “ethnographic slice” advanced archaeological theory considerably in a number of important ways, this emphasis had the effect of presenting “snapshots of curiously timeless ethnographic worlds that succeed one another without real discussion of the reasons and mechanisms for change” (Robb and Pauketat 2013b:17).

These shortcomings mean that archaeologists have to work at multiple scales to engage with the historical issues we face, regardless of which feature of the past we are interested in analyzing (Harris 2017, Robb and Pauketat 2013). Of course, this has been known to archaeologists inspired by the general approach of *Annales* historians (Bailey 1983; Bintliff 1991; Knapp 1992), and by the specific development of time perspectivism by Geoff Bailey (Bailey 1987, 2007). Archaeologists using *Annales* ideas emphasize one particular strand of the seminal work of Fernand Braudel (1973, 1982, 1992), who divided time and history as happening on three different levels at three different speeds.
Short-term events, or individual time, are specific momentary episodes that make up the bulk of conventional political histories. Medium-scale conjunctures, or social time, are a middle level of social groupings and institutions that represent collective efforts which coalesce and disintegrate over decades or centuries. Over the *longue durée*, processes happen in geographical time, a deep time of slow, often invisible change, and key factors include geography, climate, demography, and deeply embedded structures of belief and practice (Robb and Pauketat 2013b:11).

These three scales of time are hierarchically ordered but not integrated; the relationships between processes occurring on these distinct time scales are left unexplored (Fletcher 1992, Barker 1995). The result is that Annales inspired approaches relies on a series of simplistic dichotomies: the natural world is equated with long-term factors outside human control, whereas the cultural world is equated with human factors on a shorter time scale (Robb and Pauketat 2013b:12). While these temporal scales may interact in some cases, they are ultimately seen as ontologically distinct and only affect each other in a downward fashion - that is, the long-term geological, demographic, and environmental factors enable or constrain medium- and short-term processes, ultimately reducing their causal efficacy to mere epiphenomena in the great march of history. The structure of history is thus placed outside of the human factors that produce it, making different scales transcendent and eternal (Harris 2017:128).

Bailey’s concept of time perspectivism draws inspiration from the *Annales* historians but argues instead that the scales should be determined by questions under consideration. Time perspectivism draws on the notion of the landscape as a palimpsest: a
landscape in which material builds up in a multi-temporal way but equally may be erased and lost, making once separated moments in time proximate again. Thus, the scale at which one focuses their research and data will affect the nature of the answer produced. If the scale is essentially arbitrary, then the answer could also be interpreted to be arbitrary. However, Lucas (2005) points out that this conflates real time and chronological time (a frequent mistake in archaeology): the real lived and experiential time of the past is not the same as the chronological spread of dates we use to construct narratives, and in this manner, time perspectivism lacks an real sense of temporality (Harding 2005).

Furthermore, Bailey’s approach strikes one as a rather complicated way of avoiding the question: if the scale of any historical phenomena is simply determined by the nature of our research and data, then how do we understand the manner in which processes operating on different scales of time intersect?

Although archaeologists now have at hand a battery of high-tech means to measure absolute time, archaeology’s essential dilemma persists: the dynamic, diachronic processes of the past only exist in a static, synchronic material state (Knapp 1992:14). Even when archaeologists attempt to avoid environmental or demographic determinism in our analyses of long historical trajectories, we tend to break them down into chronologies as fine-grained as possible, to try to identify specific moments of change. This insists upon the human scale of analysis rather than looking at longer-term structural histories or multiple scales (Robb and Pauketat 2013b:10).

The fundamental problem at issue here is the standard conception of time and change, which sees change and stability in terms of ‘packages’ of social, cultural, and/or
material traits which change at variable rates against the uniform passage of time. In a sense, time is a container for change. In contrast, assemblage theory sees matter as vibrant, always in a process of becoming and ever in flux (Bennett 2010; Hodder 2012). The ongoing processes of territorialization and deterritorialization, as well as the variable temporal durations of material and expressive components, mean that change is constant. Assemblages are not static objects awaiting description but are constantly in the process of coming together and breaking apart. Time does not pass in assemblage theory, but flows. This does not mean change occurs at constant rates, or even occurs at variable rates through periods of stability and moments of transformation: change is conceptualized not as a unilinear package of traits which are stable or volatile as time passes, but at different rates simultaneously, as different interwoven assemblages change at different speeds and scales, recursively acting upon each other as they do (Crellin 2014, 2017). Thus, human history is not a single temporal flow, but multiple.20

Of course, periods of apparent stability or rapid transformation do exist; but the rates of historical change depend on the nature of the assemblage, and the relations within it will affect the impact that any change has21 (Crellin 2014:136–137). Larger scale and highly territorialized assemblages may change at such slow rates that they may appear totally stable at certain scales of resolution (a phenomenon known as “blackboxing” (Latour 1999; see also Harman 2009:33). Similarly, the build-up of numerous smaller

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20 Other relational approaches, using assemblage theory as well as other theoretical constructions, have reached similar models of understanding change (for example, Crellin 2017; Harris 2013, 2017; Harris and Robb 2012; Robb 2008, 2013b; contributions in Robb and Pauketat 2013a).

21 Changes in assemblages may include factors such as the introduction of new actants, the collapse of actants already entangled within stable assemblages, or changes in the relations between components.
inter-related changes, growing out of the historical interplay of assemblages at multiple scales, may contribute to a more marked or rapid change, known as “phase transitions” (DeLanda 2006; see also Crellin 2014:136–137; Harris 2017) or “tipping points” (Robb and Pauketat 2013b:25–26). However, these more marked transitions are not progressive, developmental, or teleological, but are instead the result of multiple processes that had already been in motion for some time and can co-exist together (Crellin 2017).

Even in these phase transitions, however, change is never total; the relations of exteriority which define assemblages mean that some actants can detach and continue even as others destabilize and transform, setting the ground for further possible relations with other existing and newly emergent entities. Each time a new assemblage is instantiated, it is different - a unique configuration. But many of the components, actants, and interactions do endure in similar ways from one instantiation (and set of relations) to the next, because some of the properties that emerge from an assemblage can endure when the assemblage changes if the relationships extend with those properties through time (Fowler 2013b:242–243). This endurance is possible because of the repeated iteration of some of the relationships that pervade it even as others wane and vanish.

Material objects (as assemblages) present a simple example of this phenomenon: the physical and chemical forces territorializing the material components produce seemingly fixed and durable relations, which allow objects to participate in different contexts while maintaining some sort of material identity (giving it the illusion of material essence)
Even simple material objects, as assemblages, are sticky: enmeshed and entangled in varieties of past relationships with other material, social, and emotional (or expressive) assemblages they have come into contact with, parts of which they may continue to adhere to the material object as it circulates amongst different assemblages. Things do not endure alone; they endure in assemblages of meanings and memories attached to them by humans, as well as assemblages of landscapes and other things (Hamilakis 2017), each with its own history before entering any other assemblage.

New assemblages emerge and proliferate by drawing other assemblages into their configurations, made possible only by the efficacy and fertility of past ones which produce yet more instabilities, uncertainties, and possibilities for future relations (Fowler 2013b). As a result, any given assemblage “is at once an effect of past assemblages, a part of past assemblages, and an extension of some features of those assemblages into many other new configurations. Assemblages are not only relational, then: they are historical. They grow” (ibid:213). The multi-scalar and multi-temporal nature of assemblages overcomes the reductive dichotomy between short and long-term processes, which has stymied progress in other attempts to conceptualize the nature of historical change. It also means that not only do we need to examine how entities existing at different scales emerged, but how entities emerged at different scales - that is, how the

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22 Indeed, this must be acknowledged to explain the existence of the archaeological record: even as the societies which created past material culture are deterritorialized and transformed, the assemblages of individual material objects - composed of the physical forces and molecules territorialized into stable form through human activity (for example, shaping, decorating, and firing an individual pot) - endure over longer scales of time. They do change, of course - processes of breakage and disturbance and decay work to break down the physical forces holding material things together. In the absence of more destructive forces, some of these artifacts and spatial relationships composing the archaeological record endure into the present, where they enter new configurations with archaeologists.
components and relations that entangle them emerge themselves on small, medium, and large temporal (and spatial) scales.

The nature of assemblages also has implications for understanding causality. Given the complex and inter-related mesh of relations and components within assemblages, simplistic notions of linear causation cannot be sustained within assemblage-based analyses (Crellin 2014:131, 2017:118). Small events may have a large effect on an assemblage, and large events may only have a small effect; much depends on the stability of the relations and the scale of the assemblages involved. Existing relations and aspects of an assemblage may act as a catalyst, causing larger-scale, and more rapid, change within an assemblage.

Bennett argues that because “single components” are in fact assemblages made up of many other components, we cannot identify a single cause (2010: 33). Instead, we should seek to understand events in terms of emergent causality, in which the configurations of relational networks are, themselves, the causal agents of change (Robb 2013a, 2013b). Emergent causality means that the same cause would not have the same effect in different instances or in different assemblages, because causality does not come from on factor but from the coming together and splitting apart of interactions between assemblages and their components (Fowler 2013a:27). Actants never act alone; they always rely on others. What we might term ‘human agency’ only ever emerges as a result of a heterogeneous assemblage of actants (Bennett 2010).

Emergent causality also means that the effects and consequences of particular events and actions are often unanticipated and only realized over the long-term. While
individual actors make intentional choices, in some cases leading to transformations such as the creation of social institutions, at the same time the synthesis of larger social assemblages is often achieved as the collective unintended consequence of intentional action (DeLanda 2006:24). For example, Robb (Robb 2013b) traces how particular human-material engagements occurring intentionally in the short-term – such as the decisions to produce and use particular kinds of material culture, made to satisfy relatively immediate needs and desires – accumulate over time, creating historical assemblages embodying the weight of past decisions. These “landscapes of action” continually restructure human action over long periods of time, eventually resulting in large-scale historical change which could not possibly have been foreseen in the beginning, such as the transition from hunting-gathering to agriculture in Europe (see also Robb 2013a).

Because change can result from a number of different mechanisms and processes, all of which involve changes in the relations of exteriority defining assemblages at different scales, there is a great deal of unpredictability. Assemblages do not exist in a state of equilibrium (like a system) but may be subject to sudden and unpredictable changes. No ideal types prefigure the historical unfolding of particular phenomena. These unfolding or emergent patterns always have multiple origins at different points in time and space, which themselves operate on different scales (Fowler 2013a:24). This does not mean they are random, merely that they are dynamic and unpredictable.
An Archaeology of Assemblage

Assemblage theory provides a framework in which the contributions of scholars whose work reduces causality to the macro-scale (i.e., the State, society) and the micro-scale (individual agency) – as well as those examining phenomena on a number of intermediate levels - can be properly located and the connections between them fully elucidated (DeLanda 2006:5). But it does so in a way that removes the need to resort to totalities and essences and linear causality to understand phenomena. Since all assemblages are nothing but differentially scaled individual assemblages composed of other ones, the ontology of assemblages is flat. As far as social ontology is concerned, this implies that persons are not the only individual entities involved in social processes, but also individual plants, animals, objects, landscapes, individual communities, individual organizations, individual cities, and individual nation-states (ibid:28). These are scaled – topologically folded into each other – but are not ontologically different from each other, and exist in the same plane of reality.

What an assemblage-based archaeology embraces at his heart is the connection between history and materiality. This approach seeks to understand how differing forms of material relationships allow different kinds of history to emerge, and situates these materials within a process of their own becoming, within the process of what we call history (Harris 2018:97).
Assemblage Theory, States, and Sovereignty

Thinking of states or ancient complex polities in terms of assemblages means that states are no longer bounded totalities defined with reference to transhistorical and supposedly universal attributes, in which power is embedded in the inherent traits of social organizational forms. Instead, they are historically individuated entities comprised of heterogeneous components of all types held together by interactions and relations of affective exteriority. Many of these components had individual histories prior to being assembled together in state configurations. This shift permits us to analyze the relations between authority, institution, practice, people, and materials more productively, because we are not hamstrung by the notion of the state as an encompassing social totality. At the same time, an assemblage-based perspective does not discount the real power of state apparatuses working in concert to shape reality for the subjects living within their realm of authority.

Analyzing complex polities as assemblages reframes the questions we should be asking. What are the components that make up any given ancient complex polity? What are the flows and processes that territorialize and deterritorialize the state assemblage? How do component parts at different scales affect, create, and reproduce political subjects? What, exactly, are the relations that constitute these political subjects? How are particular forms of political subjectivity resisted in the interstices and gaps in socio-spatial relationships of power? And how do these components emerge over short, medium, and long-term historical scales?
However, in addressing these questions, we must be wary of committing the error of reducing the state solely to a series of discrete practices and institutions (Yoffee 2005:17). States are still very real: when given the legitimacy of law and the threat of physical enforcement, the political practices in which states engage have considerable ability to define the acceptable forms and images of social activity and identity (Comaroff 1998; Corrigan and Sayer 1985). To commit this error would reduce complex polities to their constituent parts, attempting to explain their ability to act and affect the world solely through the properties of the people and institutions which compose them. At the same time, how do we circumvent this challenge without letting the reified concept of the State sneak back in? In other words,

If states are not things, but the effects of practices, discourses, and dispositions, how and why do these effects generate an apparent collective agent or instrument? How does the state act as if it were a unified subject, and what could constitute its apparent unity as a ‘thing?’ And how do social actors come to act as if the state were a real subject or a simple instrument? (Jessop 2007:3)

One place to begin is with scholars who have explored the sense in which “the state” does not exist. Philip Abrams (1988), for example, has argued that the supposed coherence of the State as an object of analysis has only served to simplify and mystify actual political practice. The reason is that the State entity is actually composed of a “state-system” – a nexus of governmental practices and institutional structures (perhaps similar to Althusser’s (1994) “state apparatuses”) – and a “state-idea,” which acts as an illusory mask that makes the state-system appear unified and omnipresent. The state-
system is constituted by the disparate ensemble of institutions, structures, and agencies that act to ensure the continued domination of key sectional interests in societies; on the other hand, the state-idea refers to a discursive construct (‘the state’) that attributes “unity, morality, and independence to the disunited, amoral, and dependent workings of the practice of government” (i.e., the state-system) (Abrams 1988:82).

For Abrams, the state-idea is both necessary and real, without which the interested and illegitimate nature of domination achieved through the state-system would be exposed. It unifies and gives coherence to what are, in fact, a large number of discrete political practices (Smith 2003:97). Without the state idea, the practice of government has no distinct location, merging into the broader field of mundane social practices of disciplinary power in general (Mitchell 1991). As Mitchell notes, “the phenomenon we name ‘the state’ arises from techniques that enable mundane material practices to take on the appearance of an abstract, nonmaterial form” (1999:77). States emerge as sets of powerful, if elusive, methods for ordering and representing social practices and principles that authorize and legitimate the polity as an association (what Agamben (1998:39) calls “constituting power), in conjunction with the practices of governance. The state-idea is constituted and given substance by repeated, and seemingly mundane, practices of regulation, monitoring, definition, and enforcement; at the same time, the state-idea does more than mask or justify the workings of power, as it orients and articulates the state system in the moment of practice (Routledge 2014:20). Thus the illusion of a separate political entity dictating policy for society holds profound consequences for action. In

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23 Here, Abrams focuses on the modern capitalist state, but the overarching distinction can easily be translated to apply to past complex polities.
other words, the state-idea is necessary to the operation of any individual polity, and the presumption of its existence has real material effects for its ability to affect the world as a relational actant.

The state-idea can take multiple forms in different historically individuated complex polities, depending on the particular configurations and acceptable mechanisms of legitimation. What matters is that it lends coherence and illusion of totality to the discontinuous practices of government, as well as the political cohesion necessary to align social interests and forces in emergent configurations – what Foucault (2007:286) has termed the ‘principle of intelligibility’ for governmental practices.

So then what is this state-idea, more precisely, and how is it made manifest? Several recent works have situated the effects of this state-idea within a configuration of sovereignty (Smith 2003, 2011, 2015:67–72; see also Khatchadourian 2016; Routledge 2014). Sovereignty refers to the relations of political authority which are grounded in violence (Smith 2011:416). Political authority is the effect of power asymmetries, extended to be the authority of last resort in a given social or territorial context. It is constituted by the relations, practices, and discourses that, in turn, constitute early complex polities, regimes, institutions, and subjects as (emergent) effects of these relations (Smith 2003:105).

Political authority is never complete and never gains ascendancy over all other social relations, and – despite the centralizing logic of political authority – authority can be multi-centric, dispersed in multiple locales, or alternative strong or weak depending on the context and issues at stake. Political authority must, as a result, be grounded in
physical and symbolic coercive force in order to reproduce itself at its limits (i.e., the
point where consent falters) (Routledge 2014:16–17). However, what is significant about
the utility of political authority as a means for analyzing politics in early states is not that
it does, or does not, gain ascendancy over all other social relations, but rather that:

[...] the promise and potential of that ascendancy is produced and reproduced
despite its effective absence in specific contexts. This implies at least two things:
one is that political authority needs to be imagined or represented as continuous,
even though it is not; the other is that political authority in the form of a political
apparatus (be it one person or a set of institutions) cannot stand alone, but must be
linked to other social forces, interests, and orders in a complementary manner if it
is to be imagined as continuous (ibid:17).

This quote is interesting for two reasons. First, the concept of political authority is
similar in effect to the state-idea, in that it acts to smooth over the discontinuities in the
actual realization of sovereign power, and render these interstices invisible to its political
subjects. This is possible only with the perception that state institutions, techniques, and
practices are operating in synchronization to further the objectives and desires of the
state; in other words, political authority provides the principle of intelligibility which
direct the actions of the constituent parts of the state assemblage. Second, the nature of
the state as assemblage – that is, political authority can only endure if entangled in
relations of exteriority with other social forces, interests, and orders. Viewing complex
polities as assemblages means that sovereignty – as a real phenomenon with real effects –
emerges only from the interactions of the myriad of heterogeneous actants, which have
been assembled together into relationships that are neither wholly determinate nor wholly
independent in producing the efficacy of the larger-scale state configuration. Once emerged, sovereignty acts back on its constituent assemblages to further its own reproduction and maintenance, through the structured reiteration of territorializing and coding practices and processes.

However, sovereignty – as the relations of political authority grounded in violence – does not emerge naturally, but involves a “cutting away” of the sovereign body from the wider public of political subjects, rendering political authority transcendent to everyday relations (Smith 2011, 2015). The concept of sovereignty means that regimes, institutions, offices, and (sometimes) material entities (e.g., Bray 2015) may act as legal agents, rather than as individuals in different positions of authority. Individuals or collectives can thus act in the name of, or with regard to, the state. This serves to remove their actions from the realm of everyday relations and place them in a virtual realm of relations between the citizens and the state. The “virtual” nature of this relationship meant that it was defined categorically and a priori, rather than dependent on the nature, quality and context of the relationship between specific participants (Routledge 2014:24-25).

This transformation does a few things. First, political authority is released from the cultural and social restrictions on the contexts in which, and the degree to which, physical and symbolic coercion can be enacted. Moral restraints regarding the use of violence and force on differentially valued identities (such as gender, age, or others) and in particular contexts are lifted; the virtual restraints of sovereignty are fundamentally different because they recognize no such limits on the possibility of coercion (Agamben
1998, 2005). In addition, political authority is released from additional constraints that might otherwise limit its ability to compel. Authority can now be delegated and enacted beyond face-to-face interaction and also be responsive and discontinuous while still claiming to be monolithic and centralized (Routledge 2014:25). While political authority may be centralized and vested in particular institutions or persons – for example, royal authority ostensibly embodied by one supreme ruler – authority comes to subsume multiple offices and surrogates as a kind of umbrella figure or corporate persona, constructing and reinforcing this “virtual” form of political authority as the underlying yet transcendent basis for claims of sovereignty and the right to rule.

Ultimately, the “state-idea” is a form of virtual political authority that rests on specific practices of governance which lend substance and coherence to the concept of the state, even as that concept renders these practices intelligible by providing orientation and articulation (Routledge 2014:22). The formation of states, in this view, is not the formation of an entity, of particular regimes and subjects, or of institutions and practices; but the configuration of relationships around political authority that makes it transcendent and grounded in violence – known as “sovereignty.” Sovereignty coheres as an emergent property, a condition of particular relations and forms of political interaction and association (Smith 2011, 2015). It is not reducible to its constituent parts, but is impossible without them. Crucially, this sovereignty is not ‘formed and forgotten’ (Routledge 2014:6), but is constituted by daily effort and ongoing social, cultural, and economic production. The state has no existence save as such an ongoing process. In this sense, state formation is the state. Any given state is in a constant state of becoming.
How the relations of sovereignty emerge, and how they are reproduced over time to produce stable configurations, remains to be discussed. That is, how does political authority become transcendent and vested in the figure of a sovereign body, cut away from the wider political order of a mass of political subjects which constitutes a public? The specific details of this general process depends on the social, cultural, and material assemblages of any historically individuated complex polity – indeed, this is part of the subject of analysis for the archaeology of past politics. However, some of these specific processes have been investigated in various historical contexts, acting through combinations of spectacle and performance, the symbolic representation of ideological and cosmological order (often emphasizing particular aesthetic sensibilities and prescriptions of specific social roles and responsibilities), and the extension of authority in everyday experience through embodied routine and defining the structure of political association.

The aesthetics and participation in public spectacle and performance plays an important role in the practices of subjugation and domination (Inomata and Coben 2006). Large scale rituals, ceremonies, pilgrimages, festivals, and celebrations work to infuse a specific ethos and worldview (Ristvet 2015:25) by creating shared experience through bodily co-presence among participants and emphasizing the ways in which elite figures and sovereign authorities were cut away from the broader public through the close regulation of sensory and bodily engagement and exclusion (e.g., Baines 2006; Baines and Yoffee 1998; Inomata and Coben 2006; Houston 2006; Houston and Taube 2000; Inomata 2006; Ristvet 2015).
Commensal politics and feasting practices, as large-scale public spectacle and as a more restricted, intimate form of reinforcing class and gender distinctions (e.g., Bray 2003a; Dietler and Hayden 2001; Hayden 2014; Hayden and Villeneuve 2011; Mills 2004). Feasts, as public performances, are critical sites for defining inclusion and exclusion. They divide and unite at the same time by structuring where participants sit, who serves, who consumes, and in what order (Dietler 2001:77; Mills 2007:211). The feast also serves as a medium for the penetration of the practices of sovereignty into the material order of the everyday, bringing private traditions and practices of food preparation and consumption into the public (or semi-public) sphere (Gero 2003:287; Smith 2015:70). In addition, the economy of commensal politics extends well beyond the immediacy of the table, as entire communities could be restructured and reorganized to provide labor necessary for preparing materials for large feasts (e.g., Bauer et al. 2007; Bray 2003b; Gose 2000; Minnis et al. 2006; Silverblatt 1987).

Sovereignty is also produced through the direct representation of authority and violence, and in the way that objects and media communicate explicit messages of utility and pleasure, of morality and public good, and of intimidation and fear (Bradley 1998; Hutson 2002; Pollock 2007; Smith 2006). These media also include the aesthetics of elite display and ‘high culture’ (Baines and Yoffee 1998), which can serve to legitimate particular social orders. These messages can serve to “fix history” (Rowlands and Tilley 2006), reinforcing the values of political authority in the everyday. The representation of violence serves to emphasize the other side of the coin of sovereignty (Bahrani 2008; Brumfiel 1998; Inomata 2006; Inomata and Triadan 2009; Porter and Schwartz 2012).
Even when virtual and not actual (i.e., when the threat of violence is merely implicit), violence serves as a critical mechanism of enforcement for maintaining social order. Such representations – and the actual events of public violence – are the substance of sovereignty, in that they allow for the bodily enactment of subjugation, exclusion, and the reproduction of authority through the reduction of the human body as subject to the conditions of the state (Smith 2015:69).

In addition to public spectacle and representation of authority and violence, sovereignty requires the regular operation of apparatuses of governance that define the terms of political association. These allow power to “permeate cultural life” (Moore 2004:271; Panikkar 2009), pervading daily routine, activity and experience through the regulation, observation, and ordering of behavior. For example, Khatchadourian (2017) explores how the nested relations of sovereignty draw subjects into the everyday logics of political reproduction as a requirement for the reproduction of their own situated agency. Power is also made manifest in domestic life through the household and constitution of gender relations (Brumfiel 2011; Voss 2008). This ability to structure and regulate the routine lives of subjects creates embodied experience and memory through repetition, until alternative social orders are difficult to imagine.

This brief survey makes no claims to comprehensiveness. However, these (and other) various means of reproducing relations of sovereignty are inseparable in any given moment of social practice. Feasting embodies both spectacle and embodied routine

24 For example, I have not addressed how sovereignty acts to regulate subjects – and reproduce the material conditions of its own existence – through the structuring of labor and taxation, the minutiae of production, and the enumeration and taxation of subjects. The literature on these subjects is extensive.
through feeding and consumption; the figurative representation of ritual and commemoration fixes spectacle in particular ways (Harmansah 2007; Kus and Raharijaona 2006); public spectacle routinizes relations of authority through the repeated participation in particular roles, and through the ritual enactment of daily practices and seasonal cycles of different people and temporalities (Bauer 1996; Ristvet 2015). The intersections between these different categories of ways the relations of authority are reproduced are innumerable and interwoven at various scales.

These different approaches together constitute simultaneously operating components of the assemblage of sovereignty, which can be collectively called hegemonic projects (Gramsci 1971). Ultimately, these strategies of sovereignty do not operate solely by domination through violence or control over the access and distribution of resources, but on consent forged through mutual exchange and the active role of subjugated peoples in the reproduction of the polity (Khatchadourian 2013:110). The actions involved in “cutting away” the sovereign body as transcendent (or virtual) also involves transforming the polity, and the demands of royal authority, into an object itself which is considered right, good, desirable, and sublime, and worth of worship and perfection in accordance with the course of the universe (Smith 2006:125). If sovereignty is the effect of the intersection of authority, force, and transcendence, then hegemony is the condition that allows this intersection to occur (Routledge 2014:158).25

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25 While an extended discussion of Gramsci’s concept of hegemony is not necessary here, the term refers to a dominant world view that fully permeates social relations (Gramsci 1971:181–182). For Gramsci, this term refers directly to the process by which subaltern classes acquiesced to their own political domination through the use of education, cultural activity, symbolic expression, religion, language, traditional cross-class alliances, and so forth. Under these circumstances, hegemony and coercion were intimately linked as
Hegemonic projects are only successful through the articulation of its elements acting together in conjunction to define and territorialize the field of socially acceptable behavior and discourse. Importantly, hegemonic projects select cultural resources from amongst the many possibilities generated by everyday life and configure these resources in the interests of sovereignty, seeking to exclude or subordinate alternate views (Routledge 2014: 164). The relations defining such projects are inherently those of affect, mobilizing cultural and social resources of meanings, values, and lived social practices and recruiting a multiplicity of human and non-human actants to enact and reinforce them, as well as entangling and structuring relations of production and consumption and ordering logics of bureaucracy and managerialism. It is, in a sense, a large-scale territorializing set of processes which act to assemble and reproduce the components of the assemblage of states and sovereignty.

Material practices and landscapes are critical to the transformation of relations of power and authority, and thus to the emergence and maintenance of hegemonic projects. Their efficacy and duration as actants in extends and reproduces relations of power and affect, entangling subjects who are obliged to engage with them (Johansen and Bauer 2011). Subjects in particular formations also defined by material practices through which they were collectively bounded and differentiated from those that surrounded them. These material practices served to transform political authority from an asymmetrical two sides of the coin by which dominance was organized and perpetuated. In this way, hegemonic projects work to naturalize the relations of domination, making them universal and legitimate in the ideologies and practices of individuals (Boggs 1984:161). For further discussion of how hegemony can be productively used to understand relations of power in pre-modern states, see Routledge (2014); Khatchadourian (2013); Kolata (2013); Leone (2005).
relationship between persons into a virtual one between governing/ruling institutions, 
often but not always vested in specific individuals, and subjects. This efficacy and 
entanglement is ultimately what allows power to pervade daily routine, activity and 
experience.26

Importantly, these relations and forms of association from which sovereignty 
emerges are not created de novo, but are transformed and forged from earlier assemblages 
and sets of relationships which coalesce in heterogeneous and multiscalar assemblages 
over millennia (Foucault 2007:120):

Material forces and ideologies gain their ability to shape and constrain not 
through universal relationships of causation, but through historical relationships 
of emerging material interdependence. Living in particular environments, utilizing 
particular technologies, being born into the midst of existing practices, 
dispositions and values, means that over time social fields are linked to one other, 
the possibilities of existence for specific subjects are constrained, and life choices 
gain an element of path dependency. By selecting and articulating existing 
elements in a given historical context, hegemonic projects attempt to capitalize on 
these material interdependencies in the interest of forming and reproducing 
sovereignty. (Routledge 2014:73)

In other words, the critical material and cultural components selected and mobilized in 
the reproduction of sovereignty are actively assembled from existing repertoires of 
assemblages and configurations of different types. These pre-existing assemblages

26 This critical mediation of material things in hegemonic projects – the material practices of sovereignty – means that we can approach their manifestation and configurations in pre-modern states from an archaeological perspective. These material things (such as texts, buildings, art, material symbols, administrative and economic infrastructure, and even plants and animals) select, order, and articulate cultural resources just as much as humans. However, this is more than just making the most of archaeology’s inconvenient absences, as it shifts our focus to the ways in which the non-human world is entangled in any assemblage under analysis.
contain multitudes of different heterogeneous actants, each of which has their own histories of development and affective participation in local and regional communities over the long term.  

The preceding discussion presents three main avenues within the theoretical frameworks of sovereignty and assemblage for a renewed analysis of states in archaeology.

1. First, we can investigate how the relations and interactions between specific institutions, practices, discourses, and materials continue to do the daily work of maintaining sovereignty – that is, how complex polities continue to “become” and how virtual political authority is reproduced on a daily basis. In doing so, we must be vigilant in rejecting “the state” as a bounded totality, recognizing that sovereignty is an emergent result of these interactions and relationships. How do hegemonic projects work to transform the polity itself into an object of devotion, securing not simply the surrender of subjects but their active commitment to the reproduction of sovereign relations?

2. Second, if the “state-idea” – this transcendent form of political authority – is a result of transforming and mobilizing existing relationships and forms of political association into a given claim of sovereignty vested in specific individuals and

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27 The process of linking cultural practices, with their own history and social distribution, to political authority is a process that Routledge (2004:185–190) calls “entrainment.” This linking of these cultural practices serves not only to reproduce political authority, but transformed these cultural configurations through the selection and incorporation into hegemonic projects. This transformation can occur both in the mechanics of a cultural practice itself and in its use as an indexical sign of political authority.
institutions, then we can also study the particular historical events to understand how these transformations occurred in historically and culturally contingent ways. What changes occurred in the pre-existing assemblages that transformed political authority from an asymmetrical relationship between persons, into a virtual one between offices of authority (of last resort) and classes of people subject to that authority in a distributed and delegated manner? In other words, how is political authority made transcendent in given contexts? How do the principles that authorize the polity as an association arise and come to be positioned as the source of legitimacy for political authority?

3. Finally, we can investigate the formation of existing sets of relationships and the sociocultural, political, and economic contexts out of which this transformation occurs. Understanding how and why pre-modern states emerged and acted to reproduce their sovereignty in particular configurations requires investigating these contexts – how the assemblages which gave rise to states developed, territorialized and deterritorialized, and transformed over long periods of time.

Doing so without falling into the traps of social neo-evolutionism requires reframing this process as emergent and historically contingent; state formation was not the inevitable result of particular historical processes, but a largely accidental and unintentional result of centuries or millennia of decisions and interactions involving both human and non-human actants, which more closely entangled each other into new contingent formations that were not foreseen during the moments of action. Ultimately,
the projects of sovereignty emerge and coalesce from the formation of local and regional communities of political association, socioeconomic relations, cultural configurations, material entanglements, criteria of inclusion and exclusion, and cosmopraxis over the longue durée. Even if the emergence of individual states involves the regulation and codification of people, things, places, plants, animals, and other actants through bureaucratic institutions, as well as the enforcement of contingent social orders through symbolic and physical forms of violence, this “assembling” takes place by drawing out pre-existing and long-established configurations and transforming them as necessary participants in the reproduction of political sovereignty.

However, these regional communities are not only important as a source of sociocultural materials ready to be mobilized for hegemonic projects. The formation of regional communities itself is a critical, if often understudied, component of state formation. Such communities are the primary constituent components of a state assemblage, necessary for a political claim of sovereignty to be made in the first place (Smith 2015). As a result, this aspect of analysis is concerned with the creation of a self-recognizing, coherent public, with recognizable and material markers of inclusion and exclusion, which is not maintained exclusively through face-to-face interaction – a process which requires analysis over multiple scales of time to fully understand.

This latter avenue of investigation is ultimately the project of this dissertation, and I seek to situate the development of the Inca state as an assemblage emerging from the development of regional communities in the Cusco area, occurring primarily over the long-term and prior to the moments in which political authority is transformed into
virtual relations of sovereignty. Doing so can help us understand the particular form in which Inca state formation eventually assumes, and how existing sociocultural institutions and material practices, things, and landscapes are utilized and leveraged to transcend personal relations of authority. The assemblage perspective brought to this task also affords a critical role to the efficacy and transformative capacities of material things and non-human entities entangled in these processes. We can also examine how the relations between these specific assemblages change or are maintained through time, promoting the emergence of specific mechanisms for the accrual of power into the body of the Inca ruler to emerge. While not a universal process by any means, the emergence of these mechanisms of power is highly contingent on the particular historical configuration of different entities and the relations of affect connecting them.

Regional Communities as Assemblages

Investigating how this self-recognizing, coherent public – what I call here a “regional community” – emerges, hangs together, and transforms over time requires first understanding what communities are from the perspective of assemblages. Communities are not just social entities which grow organically from the extended spatial cohabitation of people (cf. Kolb and Snead 1997). This version of community is prefigured, bounded, and uniformly human, and emerges naturally and functionally from extended human

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28 The approach in this dissertation is not simply a convoluted way of conducting a long-term culture historical study in the Cusco region, nor is it (in practice) parallel to other projects which investigate the development of the Cusco region from a neo-evolutionary perspective (e.g., Bauer 2004, Covey 2006). State formation is not the penultimate inevitable step in a process of social evolution, spurred into motion by demography and climate change. I am instead interested in why the Inca state takes the particular historical and contingent form that it does.
interaction. Such an approach fails to engage meaningfully with the potential for human agency as emerging from entangled relations and affective fields with other entities, orders, and things (Harris 2012, 2013). Furthermore, it has difficulty explaining how communities transformed themselves diachronically (Knapp 2003:567).

In addition, this version of community is often framed as implicitly local, in opposition to society or larger-scale sociopolitical entities (Harris 2012; Watts 2006). However, an assemblage perspective treats this as a distinction that is neither real nor useful. Social assemblages – communities of different kinds – exist at multiple scales, and larger-scale entities (such as states and empires) are themselves forms of community that exist extended beyond the possibility of face-to-face interaction. They can emerge at regional or interregional scales (such as the Cusco region, or even the south-central Andes as a whole), through localities or geographic boundaries (such as Minaspata or the Lucre Basin), or even within and across those localities (such as extended kin groups, communities of practice, or political factions). Of course, the differences between communities at distinct scales are not trivial or unimportant – some of the processes that act to territorialize and deterritorialize them, for example, may be different or depend on different organizational factors or communicative technologies. However, these communities are folded and interwoven within each other, and any assemblage can be a community and a component in many other communities at different scales simultaneously. Because all assemblages are ontologically real, the analytical tools used to analyze distinct communities (as assemblages) are similar.

This division has its roots in Tönnies’ (1988) old distinction between *gemeinschaft* and *gesellschaft*. See Creed (2006) and Esposito (2010) for further discussions and critiques of this concept.
Treating communities as relational assemblages means approaching them as the contingent outcome of relations between heterogeneous groups of humans, but also animals, places, landscapes, monuments, things, and so on (DeLanda 2006:12). The “community-as-assemblage” approach also requires us to recognize the historical specificity of their relations, but also that these relations can endure or transform through time: because the assemblage is in a state of flow and always in process (ibid:28). Some of these processes act to sharpen the boundaries around an assemblage, smooth the internal homogeneity within a community, and help extend its existence through time; others work to break an assemblage down, or even transform it into something else (Harris 2013:186). Many territorializing processes are also deterritorializing – for instance, the introduction of a new technology or a set of religious practices can transform a community, creating a coherence and boundary centered around these new lines of becoming even as they destabilize or reduce the importance of earlier materials and practices which served as earlier territorializing processes (ibid:179). By focusing on the ongoing production of the community-as-assemblage, we can also avoid reifying community into an ideal type.

Communities emerge and are sustained at different scales through the relations of exteriority which constitute affective fields (Harris 2012; Harris and Sørensen 2010). The affective relations within this mixture – whether friendly, violent, intentional, or unintentional – are crucial vectors in how different parts of the assemblage impact and
impress on one another (Bennett 2010). These affective bonds are created through processes of community engagement, such as the repeated acts of building and rebuilding historically shared forms of architecture and monuments (e.g., Harris 2016a; Pauketat and Alt 2005; Pollard 2013; Moore 1996, 2005, 2010; Whittle 2003, 2009; Vranich 2006); habitual, routinized activities taking place in particular spaces (e.g., Allison 2008; Knapp 2003; Moore 2007; Owoc 2005; Pauketat 2000, 2008; Robin 2014; Schnachner 2008; Snead et al. 2009; Varien and Potter 2008; Yaeger 2000; Yaeger and Canuto 2000); or intentional acts of community building through shared participation in ritual, pilgrimage, and ceremony (e.g., Baires et al. 2013; Inomata and Coben 2006; Isbell 2000; Isbell and Vranich 2004; Mills 2004; Moore 2005; Ristvet 2010, 2015; Triadan 2006; Van Dyke 2013; Baines 2006). Communities of practice (Lave and Wenger 1991; Wenger 1998) can also form and create enduring configurations through common processes of making things and passing on embodied knowledge (e.g., Bartlett and McAnany 2000; Kohring 2011; Minar 2001; Roddick 2009; Sassaman and Rudolphi 2001). In addition, the creation and use (and, in some cases, structured deposition) of more portable forms of material culture, shared across settlements and wider regions, is also instrumental in understanding how communities create and maintain connections beyond their own boundaries (Fowler 2013a; Harris 2013, 2017; Jervis 2013; Smith 2015).

These affective engagements serve to link people to particular kinds of pasts and particular ideas of dwelling and being, asserting community values. They also create a

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30 Of course, these relations of affect – which can include emotions, desires, memories, and attachments – do not work the same way between all constituents: human beings affect, and are affected by, others in a different manner than pots, animals, plants, or places. On the other hand, emotions, desires, memories, and attachments should not be ignored nor their effects reserved solely for the realm of human beings.
commitment to place, allowing people to make sense of their broader connections through working and transforming the landscape (e.g., Johnson 2012; Kosiba 2011; McAnany 2010; McFadyen 2008; Minnis et al. 2006; Moore 2007; Tilley 2004; Salas Carreño 2016; Swenson 2015). In this sense, community is a term for describing the emergent consequences of these affective relationships (Harris 2012:91). Situating community as an assemblage implies that the phenomena which emerge from these relationships include shared social configurations, practices, material culture, understandings of place, values and ethics, and ways of viewing the world – all of which collectively bind actants together into coherent groups with shared senses of identity and orientations in the world, and form the critical components from which the state draws in constructing hegemonic projects.

Many of these previous studies of archaeological communities have significantly advanced our understanding of past communities, by placing agency and practice at the center of our analyses, offering up historically situated and contextual approaches. They have also begun the work of overcoming the dichotomy of “natural” and “imagined” communities (e.g., Isbell 2000) by recognizing that ideological and spatial components play important roles in the maintenance and transformation of community and tradition over time. However, many suffer from the centrality placed on specifically human agency and practice, ignoring or reducing the roles of non-human and material entities and assemblages in the creation and maintenance of community. This humanistic approach sets us apart as ontologically different in our ability to affect the world around us, returning us to a world of dualities and ignoring how human agency and action can only
emerge through relational assemblages (including material and expressive components) which possess their own vibrancy and efficacy. Even where attempts have been made to incorporate these (e.g., Knapp 2003; Moore 2007; Whittle 2003; Yaeger 2000), materials generally remain external as expressions or mediums of community practice, rather than active agentic members of the community (Harris 2012:86), rendering them fundamentally representative to human action and intention. The effect is that these non-human entities seem to consistently disappear from our archaeological analysis of community.\(^{31}\)

Acknowledging that communities emerged from relations between humans, animals, plants, places, things, and other entities raises important questions of how personhood is constructed in different ontologies, and the various roles which non-human (or non-living) persons may contribute to community. Drawing on work by Marilyn Strathern (1988) and Roy Wagner (1991), the study of personhood refers to the ways in which identity and the state or condition of being a ‘person’ emerges from relations of different kinds, rather than from a prefigured and bounded entity (usually identified as a human individual) (e.g., Brück 2001, 2004; Chapman 2000; Fowler 2004, 2010; Harris and Robb 2012; Robb and Harris 2013; Thomas 2004; Wilkinson 2013b). Different cultural or ontological contexts may see personhood constructed in different ways, constituted through the relations of humans, animals, plants, materials, places, practices, and substances. Personhood is potentially partible, permeable, or distributed; through

\(^{31}\) Harris (2013), Fowler (2004), and Pauketat (2008) are a few notable exceptions.
these relations, some individuals can emerge as “greater-than-human,” while others can be objectified and stripped of personhood altogether.

In addition objects, animals, and places can emerge to become ‘persons’ as well, as these may be constituted through the same relationships (Fowler 2004, 2010; see also Bray 2015; Jones and Richards 2003; Pollard 2006; Ray and Thomas 2003). Of course, the non-humans in question do not have to be incorporated within human bodies and identities for them to play an active role in the relations that constitute community. Nor do non-human ‘persons’ necessarily emerge from these relationships with the same capacities and properties of humans, acting solely as a metaphor, but may still be inscribed animacy, agency, and efficacy that are different from (and perhaps beyond) that of human persons. However, we are required to examine not only how communities are partially constituted of non-human things and entities in a general sense, but also how particular non-humans emerge to become persons in their own right, active and agentic within the communities they help to form. This can include different animals, things, and places, but also non-living humans.

Indeed, the role of the dead in community formation is a relatively well-studied example of this broader phenomenon. The integration of deceased ancestors into relational webs of community has long been understood to play significant role in the constitution and territorialization of communities at different scales (for example, Charles and Buikstra 2002; Eeckhout and Owens 2015; Hutchinson and Aragon 2002; McAnany 2013; Mithen et al. 2016; Notroff et al. 2016; Silverman 2002; Thomas 2016). The importance of considering the role of ancestors is particularly cogent in Andean cultural
settings, where the worship of founding lineages and important ancestors in ritual practices served as the founding principles of social and community organization during some periods (e.g., Dillehay 1995; Eeckhout and Owens 2015; Isbell 1997; Kaulicke 2016; Kosiba 2011; Lau 2016; Nielsen 2008; Salomon 1991, 1995). Importantly, in these contexts, death did not necessarily strip certain humans of personhood, although it did transform the physical (and metaphysical) capacities and properties of these persons. Other places and things could also emerge as persons of different kinds: in the Pre-Columbian Andes, the matter was seen as powerful and active, and different features of the landscape – or even particular objects – could be “persons” of a sort known as huacas (Bray 2009, 2015; Nielsen et al. 2017; Salomon 1991; Sillar 2009). These huacas were not the same as humans, with different capabilities and kinds of intent, but their personhood and animacy still needed to be reckoned with, and – in some situations – subjugated and brought under control (Wilkinson 2013a).

This is not to say that non-human entities only affect and constitute communities by emerging as particular kinds of persons. Indeed, all sociocultural life would be unimaginable without the material world. It is precisely the efficacy of the material world – the capacity of things to affect the world, make something new appear or occur, or make the things we take for granted occur again and again – that allows society to endure and transform. Things do act as physical tools, representations of meanings and values, or as intermediaries for human interaction (as objects for exchange or gifting, for example), thus extending human agency and allowing it to endure beyond the moment of instantiation. But their role in social, cultural, and political life is much more complex.
Material things work to create dependencies, entangling humans and materials by breaking down over time or suddenly (Bennett 2010; Conneller 2011; Hodder 2012; Bauer and Kosiba 2016). They can be indexical signifiers of identity, acting to exclude and include, acting to stabilize or destabilize social constructs through engagement. They also captivate human attention, ordering human social relations and productive capacities by becoming objects of desire, subjugating human capacity for action to the operation of material assemblages (Smith 2015:57).

Central to the efficacy of materials to act in assemblages is the ability of items to reproduce and transform (Smith 2015:51–52). As critical components in social assemblages, their reproduction acts to stabilize or territorialize configurations. Things are “sticky” with associations, memories, and relations of affect, and this bundling of relations together provide them an effective motility to extend assemblages through space and time (Fowler 2013b). This same efficacy enables their capacity to change and destabilize assemblages, exposing institutions, communities, and polities to tremendous forces of transformation. Critically, the relationship between different identities of personhood (or subject-positions) and the material world may be unstable and open to question at certain junctures. Indeed, the proliferation of material culture over the long term of human existence indicates its importance in the constant struggle over social relationships and identities. Material culture not only projects forward certain relationships, but also generates new ones, providing future generations with the possibility of altering those relationships (Fowler 2010).
Landscapes, as part of the material world, operate along similar principles, bundling association and affect which are intimately associated with a sense of dwelling and place. The difference is that landscapes change and accumulate meaning on larger scales of time and space, and lack the motility of material objects. This allows assemblages to hang together more readily, as the slower tempo of landscape – once affected by human assemblages or other entities – itself contributes to the territorialization of particular communities (e.g., Brittain 2013; McFadyen 2008). Place-making is critical to the processes of community formation as well, policing territorial boundaries and providing areas for congregation and segregation. They also create regionalized locales defined by specific and habitual activities, understood as routinized, sacred, or political, creating opportunities for both territorialization and deterriorialization (DeLanda 2006:95–99). Rather than simply a container for action, space is an integral component, forming places with particular qualities and capacities in relation with humans and other materials. The ability of humans to affect and alter landscapes and environments has long-lasting, emergent, and unanticipated effects on future assemblages as the relations entangling them change.

The formation of regional communities does not mean that all aspects of identity are fully shared across a wide area: material practices, particular social orders, and ethnic boundaries may differ to varying degrees throughout a regional community. Nor is this term, with its attention to material efficacy, simply a shorthand meant to describe a cumulative style of making and using material things across a region. Rather, material practices that are enacted form a critical component of shared experience, reproducing a
worldview and identity that signifies a common cosmological or ontological framework of how the world works, and the role of (different) humans and non-humans within it.

The emergence of historically individuated configurations constituting regional communities encompasses assemblages of objects and landscapes which manufacture distinction and police boundaries between those who are members and those who are not (Smith 2015). These assemblages do two things critical to the emergence of sovereignty. First, they establish a mode of reckoning based on the qualities of materials – the distinctive shape of architecture, the unique decoration and form of cooking or serving vessels – and their imbrication in social practices. Second, they act to police social boundaries (both internal and external, linking the use of certain objects with differences in class, age, and gender), elevating formal and aesthetic differences into moral and political privileges (ibid:22). Thus they create an assembly of strangers, who are made familiar to each other through assemblages of publicity, as forms of mass mediation and sites of encounter (ibid:98).

This fabrication is mediated through – even made possible by – the requisite tools, objects, spaces, and interactions with the non-human world that allow communities to come together and engage in political activity, to reproduce themselves not simply as individuals but as a collective open to governance. It also creates the simultaneous material inscription of exclusion that sets off a collectivity from its neighbors, even as it integrates that collectivity to varying degrees with other neighbors. Thus a regional community forms a critical condition for the emergence of sovereignty. The state’s first

Smith calls this a “civilization machine,” a critical element in the emergence of sovereignty (2015).
aim is to create the sort of subjects who can address its call, but it does not begin with a blank slate: aspiring sovereigns must work with communities whose collective formation is already in process, both in the short term and in the *longue durée*. But first, subjects must recognize each other as real or potential associates.

Extending communities to include material and non-human entities allows us to appreciate how multiple interwoven communities exist simultaneously at multiple scales (regardless of how consciously past peoples understood themselves as members of a particular community), how communities are sustained over time and large distances, and how they transform and change over different scales of time. The multiscalar nature of community-as-assemblage is crucial for understanding how they formed, endured, and transformed in the past. Regional communities are not just the aggregation of different bounded settlements, but the relations of exteriority and affect which assemble them into larger entangled entities. Multiple communities exist at any given time, folded and woven into each other in topological fashion, existing simultaneously and encompassing different sets of heterogeneous elements at different scales.

To understand communities, we need to examine on the ground detailed processes of practice formation from the material remains (pots and bones); but these material artifacts are also the products of real historical processes, and to understand the artifacts and how they acted, we have to have a grip on the broader-scale transformations that were taking place, on the emergence of new kinds of community (Harris 2017:135). This acknowledgement of the importance of multiple scales is essential if we are to avoid reductionism at either the micro- or macro-scales (DeLanda 2006; Robb and Harris
2013). It also allows us to recognize – and take into account – how assemblages allow different components to act “upwards,” but how larger-scale assemblages also emerge and act downwards on their constituent components in different ways. Each part of the assemblage – itself a “line of becoming” simultaneously composed of other such lines – has the capacity to register affectively on others.

Consumption and Regional Communities

If we conceptualize regional communities as assemblages, and as critical components in the construction of complex polities, then we need to investigate how the heterogeneous components operationalized disparate (and often contradictory) desires, interests, practices, materials, and traditions; and furthermore how these relations and entities gradually became entangled in broader fields of power and affect and were transformed in the process. Such an understanding of regional community formation can only emerge from a consideration of multiple scales of time, space, and interaction. The key question, of course, is how these theoretical statements on community formation can be effectively operationalized in archaeological contexts.

I suggest, following Dietler (2010a, 2010b), that a focus on the process of consumption provides a promising means of connecting the material remains of the archaeological record to the myriad past assemblages which reproduced and transformed Cusco communities (including Minaspata) through time. This means that we need to look carefully at the particular things that were actually produced and distributed, and the ways they were consumed. We must examine the specific properties and contexts of these
objects and practices and try to understand the ways in which they acted as social and cultural mediators of human and non-human interaction. Finally, we also need to address the equally crucial consequences of consumption: what were the immediate and long-term social and cultural ramifications of these processes of consumption?

Archaeologists have always studied consumption patterns to some extent, as consumption of material remains is ultimately what determines which objects are recovered, where they are located, and in what state they are found. But a more structured understanding of what this can tell us is appropriate. Rather than the final stage in a purely economic process, consumption, for Dietler, is an agentive and symbolic activity deeply embedded in, and constitutive of, social relations and cultural consumptions. It is not simply a passive reflection of other structures; instead, consumption practices actively constitute them (Dietler 2010b:216–217). Consumption is the social process by which people construct the symbolically laden material worlds they inhabit and which, reciprocally, act back on them in complex ways (ibid: 210). Consumption is never simply a satisfaction of utilitarian needs, or an epiphenomenon of production and the availability of certain goods, but rather is a process of the assembling of identity, personhood, and political relations (2010a:58).

Consumed material objects are more than just symbolic; material items serve crucial and highly contingent roles as mediators of social and cultural practices in a wide array of related practices and institutions. These roles partly depend on the material dimension of the objects being consumed. In other words, consumption is a specific emergent capacity of larger-scale assemblages of culture, identity, resources, need, and
desire. As a result, the particular forms consumption takes is a product of specifically contingent histories.

In a broader sense, consumption is structured by cultural categories and dispositions even as it acts in turn to create and territorialize those dispositions. Cultures are inherently relational in nature; they have always been products of a ceaseless construction through fusion and innovation, enacted by the interactions and relations between innumerable human and non-human actants located differentially within complex relational fields of power and interests (Dietler 2010a:59). Consumed objects act to materialize cultural order by rendering abstract categories visible and durable. They also aid in the negotiation of social interaction in variable ways, and help to structure perception of the social world (2010b:217). Consumption is thus a process of structured improvisation that continually materializes cultural, social, and cosmological order. In effect, “culture is constructed through consumption” (Comaroff and Howes 1996:20).

Recognizing this is critical for understanding the symbolic and material construction of identity and community, of the formation of historically specific concepts of authority, class, and status, and how these arise over time in the Cusco region. The assemblages of objects and landscapes that people construct through consumption serve to both inculcate and reproduce personhood and community identity, and enables people to locate others within social fields through the perception of embodied tastes and various indexical forms of symbolic capital (Bourdieu 1984). Things themselves become invested with identity (although this does not necessarily make them a “person”): for example, a garment may be gendered or used to convey an ethnic identity (Fowler 2010:365).
Personal and community identities thus emerge relationally through the use or consumption of such things, in conjunction with other things, relations, and assemblages. Alternatively, things can destabilize these identities when mobilized in conjunction with things that have assumed contradictory categories.

The processes of consumption (of food, tools, items of adornment, imported goods, and clothing), and the meanings they take on in relational webs of significance and practice, entail both intended and unintended consequences. Dietler describes these consequences as processes of entanglement which link communities and societies together in relationships of demand, obligation, identity, and difference (2010b:74); in DeLanda’s terms, these are relations of exteriority structured through affect. These processes of entanglement are critical to understanding how communities form over multiple scales of space and time. They also have a wide variety of stabilizing and transformative effects, depending on the specific nature and history of entanglement. As new relations and entanglements emerge and connect existing assemblages, they also serve as territorializing processes acting to homogenize smaller communities into larger-scale, regional ones, marked by common material cultures, practices of consumption, and ways of structuring and understanding the social, cultural, natural, and supernatural worlds. This allows them to recognize and produce markers of difference, but also recognize each other as members of a larger-scale regional community. At the same time, these assemblages are subject to both incremental and potentially tremendous forces of transformation and deterritorialization – either through changes in the relations of existing assemblages brought about by difference, human action, and the ever-changing
vibrancy of the material world; or through the introduction of new assemblages, such as groups of people, plants and animals, technologies, methods of preparation and consumption, and assemblages of ideology and cosmology.

What is most important to understand is how materials, animals, plants, landscapes, and other non-human assemblages work to create these effects of entanglement in specific historical contexts – between each other, between humans, and between communities. The efficacy of these material and non-human components are critical in allowing entanglements to form and cohere through time, extending assemblages through time and space, even as they also create disjunctures and opportunities for change and transformation. This provides an approach to the contingent histories and consequences of these entanglements, and how such relationships work to stabilize and transform assemblages of community and identity over time, through the processes of consumption apparent in the material remains of the archaeological record.

**Conclusion**

I began this chapter by arguing that archaeology has never fully reconciled with the contradictions inherent in neo-evolutionary explanations of history, despite decades of withering critique, because these contradictions are inherent in the concepts and language of modern Western ontology. As a result, resolving these problems requires not a mere epistemic shift, but an ontological realignment. Adopting a relational perspective – in particular, that of assemblage theory – permits us to move beyond constructions of reality defined by bounded totalities and opposed dualities. As a result, we can see
complex polities and other sociocultural phenomena for what they are: open-ended and historically individuated assemblages of heterogeneous components, both material and expressive in nature, which are defined by relations of affective exteriority. All entities are assemblages, ontologically real and existing on the same plane of reality, which emerge necessarily from the relations and interactions between their constituent components but not reducible to them.

States are but one of these assemblages, emerging from the relations of sovereignty and reproduced by institutions, practices, ideologies, materials, and cultural constructs which together constitute hegemonic projects. A critical realization is that hegemonic projects are not created de novo by assemblages of sovereignty, but draw from existing assemblages which emerge from centuries or millennia of regional and local interaction. Acknowledging this demands that we examine the formation of these regional communities as critical components in the emergence of sovereignty. The material world is critical to this process, extending sociocultural configurations through time and space and acting to territorialize and deterritorialize these communities at different scales.

Ultimately, the goal of this dissertation is to identify the nature of transformations in consumption patterns through different cultural phases at Minaspata, linking these to changes in the regional assemblage, to better understand the creation and maintenance of local and regional communities over the longue durée. I have argued that treating communities as assemblages means more effectively engaging with the multiscalar and relational nature of history, situating the short-term practices of material engagement
within larger-scale processes of change and transformation. Communities are multiscalar, existing simultaneously and related in a topologically folded or interwoven fashion. This demands that we, too, analyze them at multiple levels to reach a better understanding of the past:

- As particular material practices at Minaspata – such as those involving pots, plants, and animals;
- As a coherent lower-scale local community, mediated by the material world and constructed through entanglements and relations of affect with both humans and non-humans;
- As the geographically bounded area of the Lucre Basin, particularly in the Middle Horizon and Late Intermediate Periods, where it may have formed a distinct culture area differentially affected by Wari colonization; and
- As the Cusco regional community, which eventually formed a coherent, self-recognizing public over which a claim of sovereignty could be made and which formed the critical material for the hegemonic project of the Inca state.

Each of these represents an assemblage of community at a different scale, and each has the potential to affect other assemblages existing at every scale. Because materials are so critical to the processes of assemblage and interaction, these scales can all be investigated archaeologically through attention to consumption patterns. However, the multiscalar nature of assemblages means that we must tack back and forth between the material record recovered from the site of Minaspata and compare that to larger regional developments, paying particular attention to the emergent consequences of new
assemblages entering the region at various points, especially the entry of Wari colonies to the Cusco region during the Middle Horizon. In other words, to understand the formation of the Inca state through the long-term processes and assemblages constituting the Cusco regional community – the ultimate objective – we must investigate first and foremost the smaller-scale assemblages from which it emerges, and seek to understand how these scales interweave in the same set of materials.

Of course, not all components contributing to these various assemblages can be reasonably analyzed in the space afforded in this dissertation. Such an undertaking would be tremendous and is best thought of as collaborative, emerging through the contribution of different archaeologists and research projects over time. My goal in this chapter was to outline a schema for approaching the study of states as assemblages, and emphasize the importance of considering the formation of communities over long periods of time at multiple scales when approaching the question of state formation.

Because of these limitations, and limitations in my data, I focus on a few primary components which contribute to our understanding how the communities of Minaspata (on the smaller-scale) and the Cusco regional community (on the larger-scale) formed, dissipated, and transformed over time, eventually leading to the emergence of the Inca state. The components of these communities formed the raw matter from which the Inca state drew in assembling its continual project of sovereignty. The components I have chosen to focus on throughout the rest of this dissertation include the transformations in the occupation of the site of Minaspata, and the configuration of architecture and material culture which partially constituted its community through time; the style and form of
ceramic vessels recovered from the site, and how these acted to entangle other communities across the Cusco region into a coherent, self-recognizing public; the processes of the consumption of plants and animals; and the identification of sources for obsidian fragments and tools from Minaspata and the broader region, which helps identify how these multiple communities were embedded in larger interregional webs of interaction and exchange. These components in particular are central to processes of local and regional consumption, making them ideally suited to understand the constitution and transformation of identity and culture across the Cusco region.

Before addressing these components, we must first establish the contextual background for the Cusco region and the Lucre Basin – that is, exploring what is already documented regarding the culture historical development of these various communities. This is the subject of the next chapter.
In Chapters 1 and 2, I established the need to view the formation of states and empires through a deeper diachronic lens, as the culmination of a long process of social and cultural development. The specific form that this process takes is historically contingent, and depends on the local historical conditions and decisions made by individuals, groups, and communities – decisions which made sense according to local social conditions, cultural frameworks, and ontologies. While gaining direct knowledge of these decisions is normally beyond the reach of archaeological methods, we can often contextualize those decisions socially and culturally by establishing the regional culture history and by tracing the major sociocultural events which appear in the material record. Thus, to better understand the formation of the Inca state and the emergence of sovereignty, we must establish a firm grasp of the social and culture history of the Cusco region, the Lucre Basin, and Minaspata. The ultimate goal of this task is to consider how the local conditions and cultural trajectory territorialized and deterritorialized through time, paying particular attention to how Minaspata and the Cusco regional community may have been shaped by Wari colonization from 600 – 1000 CE, and how this occupation created the conditions for Inca state development throughout the following centuries.

To accomplish this goal, we must begin by identifying the sociocultural trajectory of the Cusco region prior to the establishment of Wari colonies around 600 CE; then,
considering the effects of Wari colonization and occupation during the Middle Horizon on this trajectory; examining the conditions in the Cusco region (and, in particular, the Lucre Basin) following the collapse of Wari political authority in the Late Intermediate Period, using both archaeological and ethnohistorical data; and finally, determining the nature of the interactions between the developing Inca state and the people of the Lucre Basin, and the effects of Inca incorporation of the Lucre Basin up through the period of Spanish conquest, which had mostly been completed by 1535. To a large extent, much of the rest of the dissertation will be spent considering these topics in light of new data provided by my research at Minaspata. However, establishing what is already known from previous research will be useful in order to provide a context for the discussions and data presented in the rest of this dissertation. As a result, the purpose of this chapter is to summarize culture historical patterns evident from the existing archaeological and ethnohistorical literature (and the nature and reliability of the supporting data), identify trends in the regional sociocultural trajectory, and consider how major events may have altered this trajectory. The first part of this chapter will perform these tasks for the Cusco region more generally, while the second part will consider these questions specifically for the Lucre Basin and Minaspata in greater detail.

33 Although the Spanish arrived in Peru in 1532 and quickly ascended to Cusco, the process of consolidating their conquest over the city was not immediate (Hemming 1970). However, the first encomiendas, or land grants, were awarded to loyal Spanish conquistadores by Francisco Pizarro in 1535 (Julien 1998), suggesting that Pizarro felt that Spanish control over the former Inca lands was secure enough to begin the transition from conquest to exploitation.
Culture History of the Cusco Region

Current research throughout the Cusco region suggests a long, if uneven, process of increasing social complexity that was likely impacted in different ways by Wari colonization during the Middle Horizon, depending on the particular area. This development is often presented as culminating in the rise of the Inca state and imperial expansionary practices, particularly as a result of processes of political unification and economic intensification throughout the preceding Late Intermediate Period (e.g., Bauer 1992; Bauer and Covey 2002; Covey 2006). However, it is important to avoid framing the rise of Inca imperial expansion as inevitable, or as a result of external factors and processes (such as climate change or population increases) which predictably lead to the reorganization of human societies into comparable types of complex polities. We must consider the historical junctures at which this trajectory may have taken different paths. Failure to do this is to assume a teleological view of history and social complexity, resulting in an emaciated understanding of both the past and of human behavior more generally.

Much of the data that has been compiled regarding the social and cultural development of the Cusco region has come from settlement site survey: in the past 2-3 decades, a majority of the Cusco region has been intensively surveyed, creating an immense foundation of archaeological data for most time periods (Bauer 1992, 2004; Bauer et al. 2019; Covey 2003, 2006, 2014e; Kosiba 2010, 2011; Glowacki 2002; Kendall 1996; McEwan 1984; Covey et al. 2013). Archaeological settlement survey can provide excellent perspectives on regional transformations over large periods of time,
especially when used in conjunction with environmental data and with an economic focus on the exploitation of different ecological zones and water sources. However, such large-scale surveys have their limitations. Surface deposits may be disturbed, destroyed, covered, or altered by natural or anthropogenic processes – particularly urbanization – that present challenges for reconciling potential distortions in the data. Additionally, the type and resolution of the data available through survey methods (in lieu of extensive excavation) is partial and generally can only provide a coarse assessment of changes through time; as a result, interpretations based solely on survey can be susceptible to biases based on the particular theoretical framework used. Finally, this methodology is largely dependent on an excellent understanding of the chronology and defining characteristics of ceramic styles and other material culture. Although progress has been made in this regard for the Cusco region in recent years, much still needs to be done to fully untangle the chronological and stylistic divisions of different phases of the regional ceramic styles. The social processes underlying the production, use and distribution of these styles is currently even more poorly understood. As a result, this extensive survey data collected for the Cusco region should be considered in conjunction with other types of data, particularly careful and extensive excavations of select sites.

Some larger-scale horizontal excavations have been conducted to complement the survey data, although these types of projects appear to be relatively rare on sites occupied prior to Wari colonization ca. 600 CE. Even during the Middle Horizon, extensive excavations have focused mainly on large Wari sites at the expense of local sites (McEwan 1996, 2005; Glowacki and McEwan 2001; Glowacki 2002, 2012; Skidmore
2014), with a few exceptions (Bélisle 2015; Bélisle and Covey 2010; Bélisle 2011; Torres Poblete 1989; Gibaja Oviedo 2016). In addition, much of the research conducted on Late Intermediate Period and Inca sites under the auspices of the Cusco Ministry of Culture (formerly the Instituto Nacional de Cultura) has been poorly published, although some of this data is becoming more easily accessible (see Farrington 2013). Although it is dangerous to generalize data from one site across a broader region, excavation results from select individual sites can provide a window into the nature of broader social changes in smaller areas, particularly when used with settlement survey and – when appropriate – ethnohistorical data.

Social Change, Material Culture and Chronological Systems

Before continuing, I would like to briefly discuss the chronological system I will use for the remainder of the dissertation and my justifications for doing so in lieu of others. Many Andean scholars have used the unified archaeological chronology constructed by Rowe (1960, 1962) for the entire Andean culture area.³⁴ Rowe’s chronology consisted of six distinct periods: the Initial Period (marked by the appearance of pottery), the Early Horizon (marked by the spread of the Chavín de Huantar material

³⁴ This area was defined as the highland sierra of the central Andes mountain range, the edges of the Amazon rainforest on the eastern slopes, and the western coastal areas along the Pacific Ocean, from northern Peru to the high-elevation altiplano in northwestern Bolivia (Bennett 1948a, 1948b). Although most scholars today, including myself, would not subscribe to either the cultural boundaries of this area nor the tenets implied by the concept as a whole (Bennett drew the borders of the Peruvian co-tradition based on a long list of cultural and technological traits which purportedly unified Andean cultures [1948b: 2-3], as well as geographic features that served as natural boundaries in Bennett’s mind), Bennett’s “Peruvian co-tradition” had lasting effects in the Andean archaeological community and was influential in the creation of Rowe’s chronological system.
culture style throughout the Andean highlands), the Early Intermediate Period, the Middle Horizon (marked by the spread of Tiwanaku and Wari colonies and material styles), the Late Intermediate Period, and the Late Horizon (characterized by widespread Inca material remains). This system was based on perceived periods of cultural unity (Horizons) punctuated by periods of regional variability (Intermediate Periods). Rowe decided to anchor his chronology to a single, well-known master sequence, which could serve as a reference point for ceramic styles and sequences from all over the Andean culture area. Rowe and Dorothy Menzel (Rowe 1967; Menzel et al. 1964) chose a sequence they had studied from Ica on the south coast to serve as an anchor point.

Rowe’s “master sequence” was a significant advancement over previous attempts at establishing a unified chronology for the Andean culture area: whereas common archaeological practice at the time was to use cultural “stages” explicitly linked to cultural evolutionary criteria to differentiate temporal and spatial patterns (e.g., Bennett 1948b:6), Rowe stressed diagnostic ceramic styles as markers of chronology only. In other words, rather than identifying cultural stages implying whole suites of associated social, cultural and technological traits, the function of Rowe’s framework was to provide a chronology which could be used to relate ceramic styles to each other temporally through seriation and cross-dating.

However, decades of subsequent research has exposed some problems with Rowe’s chronology. While the Horizon concept does highlight major sociocultural transformations that are occurring at roughly the same time in highly different locations and contexts, it also tends to obscure cultural variation across both time and space. This
inability to account for regional variation is acute in some parts of the Andes, and particularly so in the Cusco region prior to the establishment of Wari colonies at the beginning of the Middle Horizon. The most glaring problem is that there appears to have been no contact whatsoever between Chavín de Huantar and Cusco during the Early Horizon: rather, the Cusco region was on a culture historical trajectory that was distinct from that of other regions, which were unified by their continued interaction with Chavín de Huantar. For the Cusco region, the chronological divisions created by Rowe to unify the Andean culture area under a single framework are essentially arbitrary until the beginning of the Middle Horizon ca. 600 CE.

One alternative to the inapplicability of Rowe’s master sequence to the Cusco region is to develop a regional chronology linked to the temporal presence of diagnostic material culture, particularly ceramics. Although both survey and excavation methods depend on diagnostic ceramics and other material culture to date occupations, the former is much more reliant on the presence of diagnostic ceramics left on the surface to identify and date sites. This is especially true since recovering material culture associated with secure stratigraphic contexts for relative dating is impossible without excavation. As a result, in many areas across the world, archaeologists have created regional chronologies explicitly linked to the production of dominant ceramic styles; when placed into seriated typologies and anchored in time by radiocarbon dates recovered from securely excavated contexts, diagnostic ceramics are generally a convenient and reliable way to date sites based solely on the examination of surface remains.
This kind of ceramic-based regional chronology is not uncommon in the Andes, and indeed, Bauer has proposed a chronological system for the Cusco region explicitly tied to the approximate dates of the production of particular ceramic styles (1999, 2002, 2004; Bauer and Jones 2003). Bauer formulated this Cusco-based chronology as a response to the drawbacks of Rowe’s master sequence discussed above, and named his chronological periods after the dominant ceramic styles of each period, supporting the temporal divisions with a large number of published radiocarbon dates. However, he notes that the latter periods of the Cusco chronology are very similar (though not identical) to those defined in Rowe’s sequence, but periods prior to 600 CE are quite different (2004:13).

The inherent danger in this type of temporal system is that for the chronological periods (and, accordingly, the survey and excavation methods reliant on constructed chronologies) to have any explanatory power, a fundamental assumption must be made linking changes in ceramic styles to social or cultural change. In other words, shifts in ceramic styles (most notably, the appearance of new styles and the disappearance of old ones) which are observed in the archaeological record must correlate to actual social, cultural, political or environmental events or processes that are reflected in the aforementioned changes in material culture. If such a linkage did not exist, there would be no clear correlation between chronology (as determined by material culture changes) and shifts in settlement patterns, and the explanatory utility of survey methods would be

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35Such an assumption also ignores the materiality of these objects, viewing material culture as purely reflective or symbolic of culture and social relations rather than actively constituting and mediating them (Chapter 2).
considerably weakened, if not rendered completely useless. Of course, such changes do often correspond to social events or processes; however, material culture – and especially the decorative components of ceramics frequently used as diagnostic characteristics – can change for many reasons (e.g., Conkey and Hastorf 1990), including mundane ones such as stylistic drift, changes in access to resources used for production, and even simple shifts in aesthetic preferences. Assuming a simple cause-and-effect relationship between stylistic changes and social transformations is hazardous in the absence of corroborating evidence, such as clear changes in other types of material culture, domestic practices, monumental or religious architecture, or settlement or substance patterns.

In the Cusco region, however, many of these shifts in ceramic style and decoration do appear to align temporally with other sociopolitical and cultural changes. The appearance of Wari and Wari-related pottery in the Cusco region around 600 CE corresponds quite closely – chronologically and socio-politically – with the appearance major Wari installations, accompanied by landscape modifications, in Cusco and elsewhere throughout Peru. Similarly, the collapse of the Wari political and economic system around 1000 CE is linked to both the disappearance of Wari pottery and the new production of Killke pottery and other related styles throughout the larger Cusco region. Finally, the rather sudden appearance of high-quality and highly-standardized Inca state ceramics coincides with both other iconic aspects of Inca material culture (textiles, metals, architecture, etc.) as part of a planned and state-directed embodiment of political authority, and the expansion of imperial practices to other locations of the Andes outside of Cusco. In these cases, the production and use of new diagnostic ceramics are not
assumed to represent some kind of indeterminate social change, but are rather chronologically and socially linked to large-scale, demonstrable sociopolitical and cultural transformations.

The case for this is less secure prior to 600 CE: relatively little intensive research, for example, has been conducted on archaeological sites dating from 300 – 600 CE, when Qotakalli and other contemporary pottery styles replaced earlier (and markedly different) ceramics (with a few exceptions: see below). Archaeologists still have only a vague idea of the nature of social and cultural practices during this period of time, and how they compare to similar practices throughout the region prior to 300 CE. As a result, the claim that the appearance and proliferation of this Qotakalli style pottery is securely linked to (or representative of) other major social or cultural change is, at this point in time, still tenuous. Nonetheless, the apparent large-scale shift in local settlement patterns associated with the presence of Qotakalli style pottery (see below), combined with the drastic differences in Qotakalli style ceramics from earlier pottery styles – which differ not only in surface decoration, but also in vessel form, size, and production technology – indicate that the majority of the Cusco region probably did undergo fairly dramatic social transformations around 300 CE. However, the precise nature of these transformations will remain unclear in lieu of additional research.

A different problem with ceramic-based regional chronologies is that not all ceramic styles begin or end promptly, rapidly replacing (or replaced by) other styles. In fact, the number of instances in which this is the case is probably far more limited than scenarios in which the production and use of certain styles declines gradually, and are
slowly replaced. Obviously, affixing reasonable dates linked to the occurrence of ceramic styles (or, more accurately, a single “dominant” ceramic style) is difficult in the latter situation. Further complicating these types of regional chronologies is the frequent presence of multiple styles used concurrently, even if one is more predominantly produced and circulated. Thus, using the names of certain ceramic styles to label the time periods in which they occur creates potential confusion, and perhaps implicitly overstates the importance of those styles in the regional development at the expense of others. It also has the effect of isolating local events and processes from those occurring elsewhere, even when they may be related.

These potential pitfalls make it tempting to disregard Bauer’s Cusco chronology and return to Rowe’s master sequence for a discussion of the regional developments. But the difficulties in doing so discussed above still remain. In addition, most of the archaeological research conducted in the Cusco region over the past two decades has been organized and interpreted following the chronological divisions put forth by Bauer; departing from this practice (particularly for periods prior to the Middle Horizon) may cause unnecessary confusion. A third way has been used by Covey (2006, 2014e; see also Bélisle 2011, 2015), which prefers Bauer’s chronological divisions but replaces Bauer’s ceramic-based nomenclature with Rowe’s terms for the different periods. The exception to this is the Formative Period, which is retained, as it more accurately reflects a

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36 Both Covey and myself make slight alterations to Bauer’s chronological divisions, particularly with regards to the appearance of Qotakalli style pottery in the Cusco region and the beginning of the Early Intermediate Period. Covey places this date at 400 CE, rather than 200 CE as Bauer does. I have chosen to split the difference, placing the beginning of the EIP at 300 CE, for reasons which I will discuss in Chapter 4.
developmental trajectory that is unique and largely constrained to the Cusco region; additionally, the Formative Period is marked by the widespread use of only two or three related ceramic styles which only overlap for a small period of time, contrary to the relative diversity of minor ceramic styles that occur in subsequent eras.

I choose to follow this combination of both systems, as it seems to not only allow for the regional variation unique to Cusco, but also links the region to larger sociopolitical and cultural phenomena simultaneously occurring throughout Peru and Bolivia for the Middle Horizon, Late Intermediate Period, and Late Horizon eras (Table 3.1). The decision to use the Early Intermediate Period, however, deserves further explanation. This period was designated by Rowe as one of regional variation and instability across the Andean culture area, located temporally between the end of the Chavín de Huantar phenomenon (ca. 400 BCE) and the beginning of the spread of Wari cultural influence and political domination (ca. 600 CE). The Early Intermediate Period in Cusco, as used synonymously with Bauer’s “Qotakalli Period” (2004:47-54), neither matches in time with Rowe’s designation, nor corresponds directly to the interregional phenomenon linked to this period, since there was apparently no contact between the Cusco region and Chavín de Huantar or its representatives during the era of its florescence. The alternative would be to retain Bauer’s use of the term “Qotakalli Period” to refer to this era from ca. 300 – 600 BCE specifically for the Cusco region. However, this creates its own problems. First, at least three other contemporary ceramic styles co-occur with Qotakalli style pottery, although the latter appears to be far more prevalent. Second, and perhaps more importantly, Qotakalli ceramics continue to be produced and
used well into the Middle Horizon alongside Wari and Wari-related ceramics, creating a confusing overlap. Because of these potential pitfalls, I have elected to use the term “Early Intermediate Period” to designate the centuries from 300 – 600 CE in the Cusco region.

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<th>Period</th>
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<td>Late Horizon</td>
<td>1400–1531 CE</td>
<td>Inca imperialism</td>
</tr>
<tr>
<td>Late Intermediate Period</td>
<td>1000–1400 CE</td>
<td>Killke, Lucre ceramic styles</td>
</tr>
<tr>
<td>Middle Horizon</td>
<td>600–1000 CE</td>
<td>Wari state colonialism</td>
</tr>
<tr>
<td>Early Intermediate Period</td>
<td>300–600 CE</td>
<td>Qotakalli ceramic style</td>
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<tr>
<td>Late Formative Period</td>
<td>500 BCE–300 CE</td>
<td>Chanapata ceramic style</td>
</tr>
<tr>
<td>Middle Formative Period</td>
<td>1500–500 BCE</td>
<td>Marcavalle ceramic style</td>
</tr>
<tr>
<td>Early Formative Period</td>
<td>2200–1500 BCE</td>
<td>Early sedentism in Cusco region</td>
</tr>
</tbody>
</table>

Table 3.1: Chronology of the Cusco region used in this study.

The Formative Period (2200 BCE to 300 CE)

Bauer defines the Formative Period (2200 BCE to 300 CE) based largely on technological criteria, from the beginnings of ceramic production in the Cusco region to the appearance of Qotakalli ceramics around 300 CE. Radiocarbon dating has also played a role in affixing dates to the use of these ceramics. Implied in this developmental scheme, and somewhat supported by the settlement patterns and limited excavations during this time period, are a gradual transition from mobility to a sedentary life; an increased reliance on domesticated food; and the aggregation of hamlets, villages and towns progressing to the development of one (or possibly a few) small complex polities with limited social hierarchy and areal extent.
The Early Formative Phase (2200-1500 BCE) is defined by the appearance of cultivated plants belonging to the Chenopodiaceae family (including quinoa and canihua) in the environmental record around 2200 BCE (Chepstow-Lusty et al. 1996; Chepstow-Lusty 2011) and, possibly, the appearance of heavily eroded, sand-tempered pottery which appears at sites containing substantial amounts of stone tools and lithic debitage (Bauer 2004:39). Bauer suggests that this sand-tempered ware may represent the precursor to later Formative ceramic styles, which appear relatively well-developed in the archaeological record.\(^{37}\) Regardless, little is known about the Early Formative Phase, or earlier periods of human occupation, in the Cusco region (though see Bauer 2004:39–40).

The beginning of the Middle Formative Phase (1500-500 BCE) is marked by the appearance of Marcavalle style ceramics and the establishment of the first villages. A series of undifferentiated settlements represent the beginnings of this phase in the Cusco Valley, which eventually grew increasingly large through time. The best-studied of these villages is the site of Marcavalle, located between Cusco and San Sebastian in the Cusco Basin\(^ {38}\) (Figure 3.1). Karen Mohr-Chávez directed the largest study at Marcavalle (Chávez 1977, 1980, 1981a, 1981b), providing the definitive analysis of Marcavalle style ceramics. Dates associated with this ceramic style suggest that production may have occurred as early as 1250 BCE and continued until perhaps 500-400 BCE (Bauer

\(^{37}\) This is, of course, assuming that pottery is developed indigenously in the Cusco region and not brought in as part of a migration of a pottery-using population. Similar pottery to the subsequent Marcavalle style, however, has yet to be located in other regions.

\(^{38}\) Marcavalle is now covered by the Cusco juvenile detention center, and much of the site has been destroyed by this building and other urbanization (Valencia Zegarra and Gibaja Oviedo 1991). The Ministry of Culture has recently re-opened excavations in the courtyard of the modern-day complex, where additional structures and well-preserved human burials have been uncovered (Pilco Vargas 2015).
Faunal analysis indicated that the villagers relied primarily on domesticated camelids, which were used and killed for a variety of purposes, including food, long-distance transport of trade goods, wool and sacrifices (Wing 1978; Miller 1979). Guinea pigs and dogs were also represented in small amounts, as were a variety of wild species such as deer, pumas, small rodents and toads (Chávez 1980:244–247). Lake cores from Lake Marcacocha also suggest a higher reliance on camelid pastoralism beginning after c. 1500 BCE based on the rapid appearance of oribatid mites, which are seen as an indication of high concentrations of camelid dung and can serve as a proxy for the intensity of pastoralism (Chepstow-Lusty 2011:576). Obsidian and other imported materials suggest involvement with larger regional trade networks, with a special emphasis on interaction with the Lake Titicaca Basin. However, no evidence of public architecture was found, and Mohr-Chávez encountered no direct evidence of social stratification or craft specialization (other than that based on age or sex).
Other small villages dating to this period also existed; the site of Minaspata in the Lucre Basin revealed evidence of occupation marked by Marcavalle pottery (Dwyer 1971a, 1986) and a small village possibly dating to the Middle Formative Phase has also been identified at the site of Batan Urco in the Huaro area (Zapata 1998). Survey conducted in the Xaquixaguana region northwest of Cusco revealed only a few small sites containing Marcavalle-like pottery (Davis 2014); however, the settlement survey data is problematic for the Formative Period, as Marcavalle pottery cannot always be
easily distinguished from the later related Chanapata style (Bauer 1992, 2004; Covey 2014a:66).

The development of larger villages and a small site-size hierarchy in the Cusco Valley began to occur during the Late Formative Phase (500 BCE – 300 CE), as did the appearance of a new ceramic style called Chanapata (Rowe 1944:10–19; Bauer and Jones 2003). John Rowe first defined the style based on excavations at the type-site of Chanapata; although unable to define it chronologically, he noted its stratigraphic position under Inca ceramics and those dating to the Late Intermediate Period, also documenting it on the surface of other sites in the Cusco Valley. Chanapata style pottery has been found at a large number of sites in the Cusco region, suggesting an explosion of new settlements at the beginning of the Late Formative Phase.

Maize (*Zea mays*) also appears to have become a more important part of the local diet beginning in the Late Formative Phase. Maize pollen appears for the first time in lake cores taken from Lake Marcacocha around 500 BCE (Chepstow-Lusty et al. 1996:131), and carbonized maize cobs were uncovered at Marcavalle dating to around 200 BCE (Chávez 1980:243–244). Carbonized maize remains were also recovered at the Late Formative Period site of Yuthu (400-100 BCE) located on the Xaquiaguana Plain, although quinoa made up 87.6 percent of the total botanical sample (Davis 2010:42–43). Camelid herds continued to meet a wide variety of needs for the people, particularly after 700 BCE when a new rise of oribatid mite abundances in the Lake Marcacocha record.

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39 Rowe also noted a slow transition from a black Chanapata ware to red ware in the earlier levels of his excavation, the latter of which he called Chanapata Derived. I generally have chosen not to use this term due to its definitional and chronological instability, but others in the Cusco region have used it and I will refer to it in the context of their work (Chapter 5).
(Chepstow-Lusty 2011:576), although exploitation of deer also continued through this period (Bauer 2004:44; Davis 2010; Davis and Delgado 2009).

Late Formative Phase sites in the Cusco Valley form a modest site-size hierarchy capped by the adjacent sites of Wimpillay and Muyu Orco in the center of the Cusco Basin. Muyu Orco is located on a prominent hill which was considered a sacred site up to the arrival of the Spanish; Zapata (1998) directed excavations on the summit and argued it was a regional ritual center, as he uncovered a sunken court on the summit, similar in form (though smaller) to courts constructed in the Lake Titicaca region during this same period. Carlos Delgado and Allison Davis (2009) have also reported ceremonial public architecture at the site of Yuthu on the Xaquiaguanana Plain in the form of a constructed platform with partially sunken structure in the center (Davis 2010).

Other relatively large sites elsewhere in the Cusco region also developed in the Late Formative Phase. Rowe initially found examples of Chanapata ceramics at multiple sites in the Cusco Basin, including the type site of Chanapata, the sites of Picchu and Wimpillay in the Cusco Valley, and a fourth site near the community of Maras (Pacallamocco) on the Anta Plain northwest of Cusco (1944). Deposits of Chanapata pottery have been reported from the sites of Choquepukio (McEwan 1984; McEwan et al. 2002) and Minaspata (Dwyer 1971, 1986) in the Lucre Basin, as well as at Batan Urco in the Huarco Valley (Zapata 1998). The site of Yuthu contained exclusively Chanapata style ceramics (Davis and Delgado 2009; Davis 2010), although Ak’awillay appears to have developed into the largest site of this region north of Anta during the Late Formative (Bélisle 2011; Bélisle and Covey 2010; Bélisle 2014). Settlement survey in the
Xaquixahuana Plain demonstrates a large number of new Late Formative Phase sites (marked by Chanapata ceramics) with a preference for easy access to multiple agropastoral ecozones (Davis 2014). Survey in the Sacred Valley (Covey 2006, 2014a) suggests that the largest sites were not selected on the basis of agricultural potential, indicating a possible rise of political inequality based on some large sites serving ritual and/or political functions; some of these larger sites also contained substantial amounts of well-made pottery and obsidian and may have served as economic hubs. However, without additional excavation data it is difficult to say whether these represent the regional establishment of ranked polities and ascribed status inequalities (Covey 2014a:72).

The emergence of a more pronounced site-size hierarchy in the Cusco Valley has led Bauer to argue for the growth of a small chiefdom society during the Late Formative, based at Wimpillay, with possible examples of other political centers in the Lucre Basin and elsewhere. However, as Davis points out (2014:54, 58), archaeologists have not found evidence of wealth differentiation in burials or households, whether craft specialists existed nor variations in public works, among other factors; as a result, we cannot assume the existence of a complex society based on a multi-tiered settlement pattern alone.

Dates associated with Chanapata style ceramics suggest production began around 750 BCE, overlapping slightly with Marcavalle pottery, and continued to be in use until the appearance of Qotakalli style ceramics around 300 CE (Davis 2010:161, Table B; Covey 2014e:12). However, excavations at the large site of Ak’awillay in the
Xaquixaguana Plain suggest that at least at some areas, Chanapata and Derived Chanapata style ceramics continued to be used throughout the Early Intermediate Period until the beginning of the Middle Horizon (Bélisle 2011). Assessing how quickly Chanapata style pottery was replaced by the Early Intermediate Period Qotakalli style elsewhere in the Cusco region is hampered by the paucity of published excavations of archaeological sites or contexts dating to this transitional period, apart from Ak’awillay. However, the large number of apparent EIP sites lacking Formative Period pottery (Bélisle 2014)– and vice versa (see below) – suggest that they change may have been more rapid in other areas than it was at Ak’awillay.40

**The Early Intermediate Period (300-600 CE)**

The most noticeable change occurring at the beginning of the Early Intermediate Period in the Cusco region is the abrupt shift to a new ceramic style known as Qotakalli. This ceramic style is drastically different, in form, decoration, paste and technology than any Formative style that came before it (Bauer and Jones 2003; Barreda Murillo 1982; Glowacki 1996). Four variations of Qotakalli style ceramics have been identified (Bauer 1999:70; Glowacki 1996:211), although more may exist. Some of this variability may be explained by diachronic changes in the style, as the Qotakalli style was produced over a fairly long period of time; however, regional variation is also possible and more research needs to be done on this topic.

40 Excavations at Minaspata in 2013 (Chapter 4) suggest that the transition from Chanapata to Qotakalli pottery in the Lucre Basin was rapid, though not sudden; production of Chanapata and Chanapata-Derived style pottery was probably completely finished no later than 400 CE, and possibly earlier.
The Qotakalli style is by far the most prevalent and widely distributed during the EIP: several settlement survey projects throughout the 1990s and 2000s identified Qotakalli components at 235 archaeological sites of various sizes throughout the Cusco region (Covey et al. 2013). However, other ceramic styles also appear for the first time during the Early Intermediate Period, suggesting different cultural influences and the possibility of different styles used for different purposes. Other ceramic styles appearing the EIP include the Waru style, which appears to be fairly widespread but has been poorly defined and studied to date; Muyu Orco style, which is relatively rare but widely distributed and has a clear similarity in motifs and decoration to ceramics from the Lake Titicaca Basin during this time (particularly to Pucara [500 BCE – 400 CE] and early Tiwanaku styles); and the rare appearance of intricately incised incensarios which also suggest an influence or origin in the Lake Titicaca Basin (Bauer and Jones 2003; Chávez 1985). An additional ceramic style identified at the site of Ak’awillay has also been reported (Bélisle and Quispe-Bustamante 2017) (Chapter 6). INAA analysis suggests that Muyu Orco style was produced in the Cusco region (Montoya et al. 2003), although no comparable sourcing data exists for the incised incensarios. These latter two styles in particular suggest a continued connection between the Cusco region and Lake Titicaca Basin, although the precise nature of this connection (religious, economic, etc.) is speculative (see Bauer 2004:50–51).

New sites and villages appear mostly in areas of lower elevation than those of the Formative Period, especially along valley bottoms and low hill flanks. These are generally found in non-defensible locations closer to water sources throughout the region.
Many Formative sites appear to have been abandoned with the appearance of Qotakalli style pottery; there appears to be little continuity in settlement pattern, with the exception of a few large sites and in a few areas such as the Lucre Basin and the Xaquixaguana Plain, where prominent Formative sites located near valley-bottom farmlands have an Early Intermediate Period component as well (Bélisle 2014; Bauer 2004; Covey 2006; Bauer et al. 2019). The longevity of sites in these regions may be related to their location near multiple ecozones, including farmland ideal for maize production; additionally, in the Lucre Basin, a limited amount of low-lying flat ground, and propensity of the basin bottom to flood in periods of high rainfall, restrict the number of areas which are ideal for settlements (Bauer et al. 2019). A two- to three-tier site size hierarchy persists during the EIP, but the villages at the top of the hierarchy tend to be both larger and more numerous than they were in the Formative Period (Figure 3.2).
In the Cusco Basin, Bauer reports a shift in the focus of settlements to the western end of the Cusco Basin, where a greater density of large sites appeared at this time (2004:52). These villages could possibly represent a large site now covered by the core of the city of Cusco. A continuous spread of large Early Intermediate Period sites appear along the southern slope of the Cusco Basin, near areas of prime, easily irrigable agricultural land. A similar pattern exists for the Oropesa Basin, but primarily on north side, which is wider and less steep than the south side – again, indicating a possible focus

**Figure 3.2:** Early Intermediate Period sites in the Cusco region mentioned in the text.

1=Marcacocha; 2=Ak’awillay; 3=Muyu Orco; 4=Peqokaypata; 5=Huasao; 6=Choquepukio; 7=Mama Colla; 8=Minaspata; 9=Piñipampa; 10=Batan Urco
on the potential for irrigation agriculture. A cluster of sites located on the eastern side of the Oropesa Basin may be linked to Cusco, or may represent a distinct community (ibid:52-53). Large EIP components have also been reported at the sites of Choquepukio, Minaspata and Mama Colla in the Lucre Basin (Bauer 2004:53; Dwyer 1986; McEwan 1984; McEwan et al. 2002). Further south, some larger EIP settlements have also been identified, including the sites of Piñipampa at the northern edge of the Andahuaylillas Basin and the site of Batan Urco in the Huaro Valley, which represent a continued occupation from the Formative Period (Zapata 1998).

With the appearance of Qotakalli style ceramics around 300 – 400 CE in the Sacred Valley area, nearly all the settlements in Chit’apampa Basin were abandoned, and a new settlement pattern was established at the lowest elevations of that basin (3500 masl) closer to water sources. More than 70 percent of sites in the Sacred Valley from 1000 BCE to 300 CE during the Formative Period show no evidence of continued settlement after 300 CE. The new settlement pattern is less hierarchical, with a proportionally greater number of small sites of >1 ha (Covey 2006:60–63) and no major villages; this contrasts with other areas, which demonstrate a more pronounced site-size hierarchy. Unlike many other areas of the Cusco region, the shift towards valley bottom is relatively slight in the Sacred Valley, as many sites remain in the upland tuber and herding areas (Covey 2014b:97).

A similar pattern is present for in the Xaquixaguana Plain (Bélisle 2014:80–81). Sixty-nine percent of sites with Qotakalli, Muyu Orco, Waru and local EIP/MH pottery styles on the surface did not contain Formative Period pottery, suggesting a significant
disruption. Settlement patterns in the Early Intermediate Period and Middle Horizon form two clusters: one on northern side, near modern town of Maras, mainly consisting of small settlements; and a second cluster closer to Anta in the southeastern part of the Xaquixaguana Plain, which exhibits more settlement hierarchy. Ak’awillay, the largest site in the Xaquixaguana region during the Formative Period, continues to grow in size and density during the EIP as well, reaching an estimated size of 10 hectares (Bélisle 2014, 2011). Ak’awillay seems to have had regular interaction with Cusco Basin based on the distribution and variety of ceramic styles present, but appears to have operated at least semi-autonomously.

A major motivation for these regional shifts may have been a focus on maize production. Pollen from Lake Marcacocha suggests that Chenopodiaceae production, which had been evident in the region from 2200 BCE, almost completely disappears around 100 CE as the climate entered a sustained cool period until ca. 1100 CE (Chepstow-Lusty 2011; Kendall and Chepstow-Lusty 2006:188; Chepstow-Lusty et al. 2003). This may have motivated the shift towards lower-elevation areas and a focus away from a mixed economy towards irrigation agriculture (Chepstow-Lusty et al. 2009:382), although archaeological evidence linking this shift to climate change is circumstantial. Chenopodiaceae production would never again reach significant levels of production in the Cusco area, despite minor resurgences at 500-600 CE and 900 CE in the Lake Marcacocha environmental record (Chepstow-Lusty 2011:577), and maize appears to have held a significantly larger role in local economies after 100 CE (Bauer 2004:53; Chepstow-Lusty et al. 1996). New vessel shapes recovered from the site of Ak’awillay
suggest changes in consumption practices starting in the Early Intermediate Period, seemingly towards consumption of liquid-based substances, raising the possibility that chicha (maize beer) became important for the first time in this era (Bélisle 2011, 2014:83; Bélisle and Quispe-Bustamante 2017). Although more research needs to be done, the cumulative data from the EIP to date suggests that across the Cusco region, local populations consciously shifted towards redirecting economic activities toward maize agriculture, and developed or adopted new pottery styles and practices, prior to the Wari colonization of the region in the Middle Horizon.

The overall settlement pattern for sites with Qotakalli style pottery suggests the center of production and distribution for this style is located in the Cusco Basin: the distribution of Early Intermediate Period sites is nearly symmetrically oriented within 9-12 hours walking distance of Cusco (Covey et al. 2013). Very few examples of Qotakalli style pottery were found north of the Vilcanota River, suggesting that the river formed a natural boundary for cultural interaction, a pattern that would continue until the formation of the Inca state (Covey 2006:60). Bauer noticed a similar distribution of Qotakalli style pottery in the Paruro survey area, where 16 of 19 sites with Qotakalli style ceramics are located north of the Apurimac River (Bauer 1992, 1999:74).

The most reliable dates for Qotakalli style ceramics tend to center around 400-500 BCE, but earlier ones suggest the production of this pottery style started as early as the mid-200s. However, the earliest date for Qotakalli ceramics is not actually associated with a clear, diagnostic fragment, but with a single undecorated buff sherd with similar paste to Qotakalli, found in a secure context dated to 260-540 CE (calibrated 95.4%
probability) (Bauer 2004:49). Other scholars favor later dates for the initial appearance of Qotakalli: Covey, for example, generally cites 400 CE as the approximate start date for the EIP in the Cusco region (Covey 2014e, 2006). Qotakalli style pottery continues to be used well into the Middle Horizon, with the appearance of Wari and Wari-related style ceramics and architecture (Covey 2014e:12). Although the absolute end date for production is uncertain, this observation is both based on absolute dating (Bauer and Jones 2003; Bauer 2004) and the fact that Qotakalli style ceramics have frequently been found in later contexts contemporaneous with Middle Horizon pottery. Qotakalli style ceramics also appear in small quantities at the Wari site of Pikillacta (4.5 percent of total assemblage) (Glowacki 1996:201) and in very small quantities at the Wari colony in the Huarco Valley, recovered at the site of Hatun Cotoyuc (1.37 percent of the total assemblage) (Skidmore 2014:300).

This obviously presents a problem for identifying shifts in the settlement patterns throughout the Cusco region: relying on surface collections of Qotakalli style ceramics to indicate an Early Intermediate Period site is highly problematic when the style probably continues into the Middle Horizon. As a result, sites containing Qotakalli and other EIP styles with no Middle Horizon ceramics can be assessed as an EIP site, but the inverse is not true; Qotakalli style and Middle Horizon ceramics found together at the same site can suggest continuity from the EIP into the Middle Horizon, or simply that a given site was established in the Middle Horizon and styles from both periods were used concurrently.

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41 This calibration was presumably performed using an earlier calibration curve (Appendix A); recalibration of this date using the most recent IntCal13 curve provides a 95.4% probability date of 333-561 CE.
42 I have decided to use 300 CE as a start date for the Early Intermediate Period, for reasons which will be discussed in greater detail in Chapter 4.
This reality indicates that the current settlement pattern data may overstate the degree of settlement continuity into the Middle Horizon.

Bauer has used this survey data to suggest that a series of small polities arose at the beginning of the Early Intermediate Period based on the emergent sociopolitical complexity developing throughout the Late Formative Phase. The largest and most powerful of these were located in areas of greatest agricultural production, including the Xaquixaguana Plain, the Cusco Basin, the Lucre Basin, and the Huarco Valley (2004:51-54). Local power appears to have been concentrated in the western end of the Cusco Basin during the EIP; however, various EIP styles and local imitations of Qotakalli style are also prevalent at sites further from the Cusco Basin. Together, the evidence suggests that a single Cusco Basin polity did not establish formal hierarchical control over the greater Cusco region, and that the power of local elites did not extend much beyond regular face-to-face contacts (Covey et al. 2013:546).

The sudden disjuncture in ceramic decoration and shifts in settlement patterns and other archaeological remains in the Cusco region from the Late Formative to the Early Intermediate Period, has led some scholars to propose that the stimulation for these changes lay in new contacts with other regions or possible population movements. Based on both stylistic similarities and geographical location, Glowacki and McEwan (2001:33–34) speculate that the innovation of the Qotakalli style developed out of contacts between the Huarpa societies of the Ayacucho region (prior to the development of the Wari state in the same area) and the Cusco populations, establishing economic and cultural relationships between these two areas prior to the expansion of the Wari state around 600
CE. McEwan (2012) has expanded this argument to suggest a migration from this area may have been responsible for the spread of the closely related Aymara and Quechua languages, as well as the changes seen in the Cusco region. Other scholars contest these claims: Covey (2014b:94) for example, points out that the Ayacucho region was not politically centralized at this time, and many neighboring areas lack Huarpa or Huarpa-like styles of pottery. However, these observations do not rule out the possibility of migration into the Cusco region that was not driven by a centralized political regime, nor the possibility that interregional interaction between these areas may have increased to such an extent that it provided the impetus for local shifts in economic emphasis and ceramic production (akin to a “peer interaction” model, rather than migration), and potentially in other spheres.

Regardless, while the hypothesis linking pre-Wari groups in the Ayacucho region to populations in the Cusco area raises several interesting implications, relying on little more than similarities in two different ceramic styles to make this argument barely rises above the level of unsupported conjecture. Much more research on this topic needs to be done; the Early Intermediate Period is one of the least investigated eras of Cusco prehistory, and we currently have little to no idea of transformations in domestic

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43 Some of the linguistic data presented by Heggarty and Beresford-Jones (2010; 2012; Heggarty 2008; Beresford-Jones and Heggarty 2011), as well as the proposed hypothesis linking the spread of Quechua language to the Wari Empire that underlies McEwan’s argument in this article, have been questioned on the basis of archaeological data (Lau 2012). Other scholars (Isbell 2012; Sillar 2012) largely agree with this hypothesis, although with caveats, and try to explain the earlier spread of Quechua using social and archaeological data. However, as Kolata (2015:422) points out, when investigating the spread of language groups and their affiliation with prehistoric societies in the absence of written texts, archaeologists will remain in the realm of conjecture for the foreseeable future.
architecture, ritual or mortuary practices, evidence of inherited status inequality, or other significant social or cultural developments, due to the general absence of horizontal excavations at Early Intermediate Period sites.

**The Middle Horizon (600-1000 CE)**

The Middle Horizon (MH) is marked by the pan-regional dominance of two distinct but related polities: Tiwanaku, whose heartland was located in the Lake Titicaca basin straddling the border between modern-day Peru and Bolivia, and Wari based in central Peru in the modern department of Ayacucho. While the primary core of Tiwanaku was centered on the southern Late Titicaca Basin, its zone of influence expanded through the installation of colonies and interregional religious and economic interaction to much of the southern altiplano, the lower-elevation yungas valleys on the eastern slopes of the Andes, the coastal Moquegua Valley of southern Peru, and the San Pedro de Atacama desert of northern Chile. Wari cultural and political influence appears to have been much more extensive spatially, covering much of the southern and central highland Andes and several coastal valleys, though the nature of this influence appeared to vary considerably from region to region (e.g., Jennings 2010a). The Wari state also installed colonies in the Moquegua Valley at the sites of Cerro Baúl and Cerro Mejía (Moseley et al. 1991; Nash and Williams 2004; Williams 2001; Williams and Nash 2002, 2006; Nash and Williams 2005), and this area may have served a sort of “geopolitical diplomatic zone” between the two polities. However, the extent and nature both states’ expansionary practices likely fluctuated throughout the course of the Middle Horizon due to constantly shifting social,
political and ecological conditions. Though different in several key respects, including their overall manner of establishing political hegemony, Wari and Tiwanaku shared often overlooked cultural parallels, including religious iconography centered on a Staff God and profile attendants (Isbell and Knobloch 2009).

Earlier investigations of the Wari state revealed a complex network of interaction displaying many practices consistent with a high level of organization and imperial expansion. This research led scholars to interpret the Wari as an expansionist polity that established administrative colonies in far-flung regions of Peru, by conquering and exploiting local populations using various methods of control (Brewster-Wray 1989; Cook and Glowacki 2003; Cook 1983, 1992, 2001; Isbell and Cook 1987:198; Isbell and McEwan 1991a; Isbell and Schreiber 1978; Isbell 1977; Jennings and Craig 2001; Lumbrares 1974; McEwan 1984, 1996; Menzel 1964; Moseley et al. 1991; Schaedel 1993; Schreiber 1987, 1992, 2001, 2005; Tung 2007; Williams and Nash 2002). However, this view has not gone unchallenged, and more recent scholarship has suggested Wari influence in some areas was both less extensive and more direct (see discussion below). Similarly, the archaeological view of Tiwanaku during the Middle Horizon has been slowly refined from an expansive empire (Ponce Sangines 1981) to an integrated and centralized state (Kolata 1993) to a complex polity whose religious and cultural influence was wide, but whose politically integrated territory was limited, strategic and discontinuous (Janusek 2008). Most archaeologists now believe Tiwanaku was an incorporative religious, economic and sociopolitical phenomenon which based its power on religious authority, local control over political economy, and a coherent cultural


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44 The site of Viracochapampa located in the northern highlands has also been identified as a probable Wari construction, but appears to have been abandoned unfinished very early in the Middle Horizon (Topic 1991) and was probably never occupied.
militaristic aggressor (Isbell 1991; Isbell and Schreiber 1978), though evidence for specific acts of large-scale military action have yet to be documented. Other suggestions have included economic incentives (Moseley 1992) or religious motives (Shady Solís 1988), or some combination of the two (Topic 1991:162; Topic and Topic 1992:177). Evidence for a decades-long drought affecting much of the Andes during the 6th century CE has also been documented (Thompson et al. 1985; Shimada et al. 1991), and some archaeologists have attempted to explain Wari expansion as a response to these changing climatic conditions (Moseley 1992; Glowacki and Malpass 2003).

The construction of these intrusive complexes was complemented by the widespread distribution of Wari material culture throughout the coastal and highland areas of Peru, particularly ceramics and textiles; other forms of luxury goods such as turquoise, Spondylus shell, and precious metals become more common or appear for the first time in many regions (including those lacking in Wari colonies or architecture). Obsidian procurement patterns shifted during the MH, suggesting that the Wari state disrupted long-established trade routes and controlled them for their advantage (Burger 2006; Burger et al. 2000). Mortuary practices also changed throughout Peru, though not all regions adopted established Wari style burial methods (Chávez 1984; Conlee 2010; Donnan and Mackey 1978; Fonseca 2011; Isbell 2004; Isla 2002; Jennings 2010a; Leoni 2004; Ochatoma and Cabrera 2001; Uhle 1991; Valdez et al. 2006; Zapata 1997). Finally, historical linguists argue that Quechua, a dominant indigenous language in many parts of the Andes, originated in central Peru and spread southwards between 1000 and 2000 years ago, possibly via Wari expansion (Beresford-Jones and Heggarty 2011; Heggarty
and Beresford-Jones 2010; Heggarty 2008; Isbell 2012; McEwan 2012). Together, this
diverse evidence indicates the Wari state directly controlled some areas, and was a major
cultural influence – if not an indirect ruler – in others.

The interpretive models that informed these earlier studies were those popular
during the 1960’s through 1980’s, such as stages of cultural evolution presented as “ideal
types” (Flannery 2002), with a resultant focus on centralized, hierarchical control, core-
periphery relationships, and direct dominance and administration of annexed territories.
These top-down approaches effectively cast subjects of the Wari Empire as
“unidimensional beings acted upon by a core power…incapable of agency” (Isbell
2010:234), and funneled scholarly attention to intrusive Wari centers both in the
Ayacucho heartland and beyond, such as Pikillacta (McEwan and Williams 2012;
1991), Honcopampa (Isbell 1988) Huaro (Glowacki and McEwan 2001; Glowacki 2002;
Zapata 1997) and Cerro Baul (Moseley et al. 1991; Nash and Williams 2005; Williams
and Nash 2002; Williams 2001). These and other studies provided a wealth of
information about many facets of Wari political structure and material culture, but they
also helped foster one-sided interpretations that emphasized Wari power and domination.

This “centralized control” model has not gone without challenge. More recent
scholarship, while not contradicting this view entirely, suggests that Wari dominance in
some areas was less extensive or limited to cultural influence and control of trade routes
(Bélisle 2011; Chapdelaine 2010; Covey 2006; Isbell 2010; Jennings 2010a, 2010b; Lau
out that the “imperial” interpretation of the Wari state was based on comparisons to Inca political economy, models of empire formulated from research in Mesopotamia, and the assumption that most Wari colonies served as administrative centers.

The largest criticism has been the absence of a significant imperial footprint in some regions (Bawden and Conrad 1982; Bélisle and Covey 2010; Hastorf 1992:46; Jennings 2006; Lau 2002; Shady Solís 1988), particularly along the North Coast of Peru (Chapdelaine 2010; Shimada 1994; Topic 1991) and areas of the northern highlands. Azangaro, a Wari site within the Ayacucho heartland, may have been built on a more consensual arrangement with local inhabitants, rather than as an imposed colony (Anders 1986, 1991). Similarly, the Wari-built site of Viracochapampa in Huamachuco was left incomplete and abandoned at an early date, and the region shows little evidence of Wari control (Topic and Topic 1992, 2001, 2010; Topic 1991). Other scholars have also emphasized interregional exchange during the Middle Horizon while acknowledging the ubiquity of Wari influence and the existence of Wari colonies (Burger 2006; Isbell 2010; Jennings 2006, 2010a, 2011; Lau 2005, 2006; Marcone 2010; Owen 2010).

Schreiber (1992) has attempted to reconcile these contradictions by proposing a model termed “mosaic of control.” She argued that, much like the later Inca Empire, Wari adopted different strategies for rule and economic exploitation in different areas; the lack of Wari “footprint” in some areas can be seen as evidence for indirect rule, where Wari installed puppet rulers or made alliances with local leaders but otherwise interfered little in those regions. While plausible, the indirect rule argument relies on the absence of evidence, and other explanations can be posited for the relative lack of Wari presence in
some areas. Isbell (2010:235, 247) has observed that Wari “behaved” like an empire much more in the southern part of Peru than in the northern part (Isbell and McEwan 1991b; Tung 2012:32), and some Wari scholars have noted that several regions reveal more complex relationships between the Wari state and local inhabitants than a simple domination-subjugation model would suggest (Castillo 2012; Conlee 2010; Green and Goldstein 2010; Jennings 2010a; Lau 2006; Llanos and Shimada 2010; Marcone 2010; Owen 2007; Topic and Topic 2001). Covey and colleagues have noted that even in areas with an unambiguous Wari colony, such as the Cusco region and the Moquegua Valley, the extent of their interaction with the local populations seems to be fairly limited spatially to the immediate areas within a few kilometers of the colony (2013:550). A possible exception is in the Jincamocco area, where more extensive infrastructure construction and reorganization of existing settlement patterns indicated a more intensive Wari involvement in the region as a whole (Schreiber 1991, 1992).

Rather than proposing overarching models to explain Wari imperialism as a single phenomenon, scholars now examine the complex and diverse strategies which Wari employed in different regions, the ways in which indigenous populations responded (socially, culturally and politically) to Wari intrusion, and how local and Wari agents interacted in the context of a centralized and influential polity. For example, Jennings (Jennings 2011, 2010a) has proposed a “globalization” model to explain the nature of Wari expansion, arguing that while the initial expansion may have been driven by imperial aspirations, conquest was not followed by consolidation, and the colonies that were initially designed to extract resources from the surrounding region quickly became
isolated and were unable to do so beyond their immediate environs. Rather, the early colonies that were founded in a few areas, and the cultural and economic ties established with many other regions, positioned the Wari as the dominant force in an extensive “global” network throughout southern and central Peru. Instead of framing the Wari state as an empire, it may be better thought of as a global cultural force linked to the capital city of Huari, disseminating religious, cultural, and political ideas, and facilitating the flow of materials and luxury goods.

Some areas in the Cusco region were dramatically transformed during the Middle Horizon due to Wari colonization (Figure 3.3). The most conspicuous Wari complex is Pikillacta, located in the Lucre Basin, the largest and possibly most labor-intensive example of Wari architecture outside of the Ayacucho heartland. Pikillacta is noted for its huge size and rigid geometric pattern forming a grid, which is orthogonal and segmented without regard to the sloped, undulating landscape on which it stands (Figure 3.4). The entire site measures approximately 1,680 meters by 1,120 meters, covering an area of nearly 2 square kilometers. However, much of this area consists of two groups of large, semi-rectangular enclosures flanking a central section that lack architecture; these may have served as corrals for camelid herds, though they also may represent unfinished portions of the site that were laid out early in the planning stages of Pikillacta’s construction. The main architectural block measures 745 meters by 630 meters, and contains more than 740 individual structural units divided into four sectors (McEwan 1998, 2005). Although the ground plan is extremely complex, it is achieved by the repetitious use of only three relatively simple architectural elements: patio groups (Type
I), niched halls (Type II), and small conjoined buildings (Type III) (McEwan 1998).

Additionally, the landscape throughout the Lucre Basin was subject to intensive modification, as multiple canals built during the Middle Horizon would have channeled water from drainages to various terraces and agricultural areas, as well as to the site of Pikillacta (Valencia Zegarra 1996, 2005). Radiocarbon dates show that the site was laid out prior to 600 CE, and was modified nearly continuously until after 900 CE (Glowacki 2005a); the site was likely abandoned sometime between 1000 and 1100 CE (McEwan 2005).

Figure 3.3. Middle Horizon and Wari sites in the Cusco region mentioned in the text.

1=Tankarpata; 2=Choquepukio; 3=Minaspata; 4=Mamacolla; 6=Pikillacta; 7=Batan Urco; 8=Hatun Cotoyuc; 9=Qoripata; 10=Cotocotuyuc
Pikillacta was long-assumed to have served as an administrative center for a Wari state forcibly dominating the region (Harthe-Terre 1959; Rowe 1963:14; Schreiber 1992:270). McEwan has questioned this interpretation by arguing that the site may have served as ritual “housing” for locally sacred mummies and shrines, enabling the Wari to extend their power into the religious domain more manifestly (2005). Other scholars, however, have noted a lack of evidence for mummification or ancestor worship in local populations either during the Middle Horizon or prior to the arrival of the Wari (Covey 2014b:100; Isbell and Young-Sanchez 2012:266; Isbell 1997b). Unlike many large sites, Pikillacta generally lacks evidence of large domestic contexts and relatively little material
culture was recovered in excavation, making interpretation of the site’s function difficult (McEwan 1984, 1991, 1996, 2005). McEwan’s interpretation of Pikillacta is based on a small number of human remains (an arm, a few ribs, a few pieces of skull, and some teeth) from 19 structures that were excavated in Sector 4 of the site. This sector is composed of 501 identical small conjoined buildings roughly five meters long and four meters wide, conforming to the “Type III” structures in McEwan’s typology (1998:72), arranged within five walled enclosures. One of the small buildings enclosed a large stone which McEwan interpreted as a *huaca*, or sacred stone, though there is little direct evidence for this (McEwan 2005:159). The size and systematic, orderly repetition of these structures had previously been interpreted as evidence for storage structures (Sanders 1973:404–408), drawing a direct comparison to rows of Inca *colcas* found at large Inca administrative sites like Huanaco Pampa (Morris and Thompson, Donald E. 1985; Hyslop 1990). However, in addition to the small amounts of human remains found in a few of these structures, McEwan uncovered the presence of hearths, ash layers, and occupation debris, including soot-marked cooking pots (1996:181–183, 2005:56–57), and he initially interpreted the purpose of these structures as living quarters (McEwan 1991:117). Sillar and colleagues (2013) have revisited this idea in light of similar patterns at sites with probable Wari components, such as Azángaro (Anders 1991), Cerro Amaru (Topic 1991), and Raqchi (Sillar et al. 2013), in which dozens of small, identical buildings are laid out in grids. At these four sites, these similar types of buildings all contain hearths, ash, and domestic pottery, and all lack evidence of either storage or ritual
practices, and Sillar and colleagues suggest that the buildings for all four sites may have all served as housing for transitory laborers employed by the state (ibid:38; see below).

While intriguing, this interpretation of these buildings still fails to explain the overall function of Pikillacta, or the practices which may have taken place there. The site also contains large numbers of patio groups and niched halls, arranged in different configurations throughout the central architectural block. Anita Cook and Mary Glowacki have argued that the patio groups at Pikillacta (and other Wari sites) served as the locations for Wari state feasting of local elites and laborers (Cook and Glowacki 2003). Large quantities of food and maize chicha would have been shared by Wari elites in a context of “patron-role” feasts (Dietler 2001:82–83), in which hospitality is used to legitimize the asymmetry that characterizes institutional power relations. This practice may have been analogous to later Inca institutionalized feasting, in which the Inca nobility sponsored feasts in order to fulfill their obligations of reciprocity to corvée laborers, as well as other administrative elite and dignitaries for services rendered to the state (Cook and Glowacki 2003:183; Rostworowski 1977:240–244) (Cook and Glowacki 2003: 183; Rostworowski 1977: 240-244), though perhaps with some important differences in the scale and execution of this practice. On the other hand, Wari niched halls likely served a more explicit religious or ceremonial function: the buildings were kept clean with the exception of offerings left in pits in the corners and beneath the door threshold, and a cache of human skulls located under the floor of one niched hall (McEwan 1998, 2005:152–158). Given these interpretations and the presence of all three structure types at Pikillacta, the site probably served general religious, political and
ceremonial functions. However, the relationship of Pikillacta to the people of the greater Cusco region is still unknown, and the storage, control and redistribution of staple goods and crops does not seem to have had a primary role in Wari state practices at Pikillacta. To a certain extent, the full range of activities which took place at Pikillacta will likely always be poorly understood by archaeologists, since the site was under continual construction for 300-400 years and the function of Pikillacta likely evolved over time (McEwan 2005:148). Jennings points out that only a fraction of the areal extent of Pikillacta was likely ever occupied, and that much of site was still under construction at time of abandonment. As a result, Pikillacta may never have been used as originally intended (2011:108).

Research in the Huaro Valley has indicated that a substantial Wari site – or complex of closely linked sites – was established there as well, although the full scale is still unclear. Glowacki and McEwan (2001) have argued that the Huaro archaeological complex served as the primary regional administrative center instead of Pikillacta (Glowacki 2002, 2012); on the other hand, Jennings has argued that there is no compelling evidence to suggest that it functioned an administrative site, and might be better conceived as a frontier city with multiple sectors and diverse groups (Jennings 2006, 2011:108). The presence of early Wari ceramics recovered from the Huaro complex suggests that initial colonization of the valley by Wari settlers may predate the early stages of construction at Pikillacta (Glowacki 2005a; Glowacki and McEwan 2001:36–38). However, the earliest radiocarbon dates found so far from domestic contexts date to the seventh and eighth centuries CE, suggesting an initial occupation
beginning sometime around 600 CE (Skidmore 2014). Unlike Pikillacta, the Huar complex does not appear to be carefully planned in advance and lacks the rigid orthogonal composition of Pikillacta, although some important administrative or religious elements were probably located near the center of the valley, and some parts of the settlement do exhibit an orthogonal layout. The total extent of the Huar Valley complex may cover an area of 150-200 hectares, but much of this appears to consist of a patchwork of large occupation zones with areas of more dispersed settlement in between (Glowacki 2002; Skidmore 2014).

To date, several distinct sections of the Huar complex have been identified (Glowacki 2002:268, Figure 9.1; Skidmore 2014:152, Figure 5.7). The largest sectors are Hatun Cotoyuc and Qoripata, each about 9 hectares in size; Qoripata may have served a possible administrative purpose or was intended to house Wari state elites (Glowacki 2002, 2012; Glowacki and McEwan 2001), while Hatun Cotoyuc consists mainly of domestic architecture and contexts which correspond closely to domestic practices identified from the capital city of Huari in Ayacucho (Skidmore 2014; Glowacki 2002; Glowacki and McEwan 2001). While Hatun Cotoyuc may have been the primary housing for segments of a Wari labor force (Glowacki 2002), this area was more likely the residence for non-elite Wari settlers, who may have colonized the valley early in the Middle Horizon independently from state-level direction or support (Skidmore 2014:313). Elite cemetery contexts have also been found at the sites of Batan Urco (Zapata 1998) and Cotocotuyoc (Glowacki 2002, 2012). The Wari seem to have displaced earlier indigenous occupation at Batan Urco: while high-status Wari burials
have been found from both looted and *in situ* contexts, local populations who had occupied the site continuously from the Late Formative Period appear to have abandoned the site to the Wari. Conversely, Cotocotuyoc may have only been established midway through the Middle Horizon and shows some evidence of continued occupation into the Late Intermediate Period (Glowacki 2002). Other sectors of the Huarco archaeological complex have also been identified, but are not well studied to date. Wari-style pottery has also been found at other large sites in the Cusco region, including Choquepukio, Mama Colla, and Minaspata in the Lucre Basin, and in surface collections in the province of Paruro south of Cusco (Bauer 1992).

The Wari state may have established a third additional outpost further to the south. Sillar and colleagues (2013) argue that several rows of 152 identical circular structures adjacent to the Inca remains at the site of Raqchi, two hours south of Cusco along the Vilcanota River, were originally constructed during the Middle Horizon. These nine-meter wide circular buildings were previously interpreted as Inca state storage buildings, but excavations in several of the structures revealed hearths, utilitarian pottery and botanical taxa suggesting a habitation function dating to the Middle Horizon. Rather than as storage facilities, the authors suggest that these buildings may have served as housing for seasonal laborers for the Wari state. The structures were possibly later re-used by the Inca as temporary housing for pilgrims involved in religious ceremonies related to the adjacent Temple of Viracocha (ibid). Wari-style ceramics have also been reported in the surrounding area, particularly at the site of Yanamanicha just south of Raqchi (Dean 2005; Rowe 1956; Sillar and Dean 2002; Sillar et al. 2013:39–41). Finally,
an elite burial at the site of Pomacanchi located in a highland basin adjacent to the Vilcanota Valley included burial objects demonstrating both Tiwanaku- and Wari-style design elements, suggesting that local elites may have actively drawn on the cultural and religious authority of both states to cement their own regional power (Chávez 1984). The existence at least two major Wari centers at the sites of Pikillacta and Huaro, along with the evidence of a smaller Wari site further south at Raqchi, suggests a Wari colonization along the Vilcanota River Valley as intensive as any other region in the Andes.

While most research has focused on larger centers such as Pikillacta and Huaro, recent research suggests that the impact of Wari colonization in other areas of the Cusco region was far less pronounced. Covey (2006:72–80) points out that the Lucre Basin and the larger Cusco region show few transformations expected of direct imperial administration, such as changes in settlement patterns or widespread Wari material culture, despite major infrastructure investments along the Vilcanota River south of the Sacred Valley. The small site of Ak’awillay northwest of Cusco shows almost no transformation of domestic patterns during the Middle Horizon, and only a handful of Wari ceramics (Bélisle and Covey 2010; Bélisle 2011). This is not to suggest that Ak’awillay was isolated; the presence of ceramics from neighboring valleys, as well as obsidian and marine shells, suggest that they were interacting with shorter- and longer-distance contacts throughout the Middle Horizon. Wari-influenced local ceramics were found in various contexts throughout the site, and the few true Wari style ceramics from Ak’awillay were found associated with a large public building likely used for feasting and ceremonies. This suggests that a degree of social and ritual importance was
connected to the Wari style, even if the people of Ak’awillay were not directly interacting with Wari settlements.

While this research is important and questions the notion of the Wari as a territorial empire, Ak’awillay is not representative to the region as a whole, as no Wari centers were constructed nearby and the area may have held little interest to the Wari (Isbell 2010:244). However, settlement survey in the surrounding areas mostly shows a continuation of previous settlement patterns from the Early Intermediate Period (Covey 2006, 2014b; Bélisle 2014; Bauer 2004), although this may be misleading: as discussed above, the lack of firm chronological boundaries separating Qotakalli style and Middle Horizon pottery may cause archaeologists to overestimate the degree of continuity between the two periods in lieu of radiocarbon dates. An analysis of the distribution of Middle Horizon pottery from surface collections throughout the Cusco region shows that Wari pottery is most common at sites in the Lucre Basin, though it has been recovered in surface collections from large sites throughout the Cusco Basin and surrounding areas, and that almost no sites with Wari pottery are found beyond a 9-hour walk from Pikillacta45 (Covey et al. 2013). On the other hand, a locally produced Wari-related ceramic style known as Araway (Chapter 6) is less common near Pikillacta, but the distribution is centered on the Cusco Basin instead, with a sharp drop-off beyond a 9-hour walk from the site of Tankarpata in smaller amounts and with a more limited presence in lower-order settlements.

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45 The survey areas used to make this argument do not include the Huaro Valley, and one would assume that Wari pottery is also common at sites to the south of the Lucre Basin as well.
The overall evidence from the Cusco region suggests that the Wari state had limited transformative effect in much of the area; however, interaction with local elites may have been considerable and the cultural effects may have been more widespread. Centuries of elite interaction during the Wari occupation must have had an effect on how elite status was communicated within local populations, and possible participation in Wari state religious rituals may have had significant effects on local political, economic and ideological practices (Covey 2006:78-79). However, the Wari colonization of the Cusco region seems to be focused primarily along the Vilcanota River valley corridor, which served as the primary transportation route to the Lake Titicaca Basin and the Tiwanaku polity, indicating that the nature of Wari interest in this region may not be compatible with a model of territorial annexation and exploitation. Nonetheless, it also raises the possibility that the different levels of Wari investment in various parts of the Cusco region may have contributed to divergent social and cultural trajectories among the local populations in the centuries following the collapse of the Wari state.

The Late Intermediate Period (1000-1400 CE) and the Late Horizon (1400-1532 CE)

The decline and eventual collapse of the Wari state is not well understood. For unknown reasons, many Wari colonies around the southern Andes were abandoned sometime around the late tenth and eleventh centuries CE, often after a process of apparent ritual closure involving the destruction of ceramic vessels, burning of structures and sequentially sealing entryways (Moseley et al. 2005; McEwan 1996, 2005; Schreiber 1992, 2005). Wari political hegemony over colonized regions was continually in flux,
and linking state collapse to waning influence in any particular region is a challenge; however, most regional Wari centers were completely abandoned around 1000 CE, suggesting a widespread and linked collapse of the Wari political and economic pan-regional network.

The capital city of Huari was also largely abandoned around this time, though in a more piecemeal fashion, and several sectors continued to be inhabited on a smaller scale even as other patio groups were sequentially abandoned and converted into trash dumps (Isbell 1997a). The city experienced a late and relatively short period of reorganization sometime in the late ninth or early tenth century, which differed substantially in plan and organization from that of the preceding epoch, with its repeating patio groups and D-shaped structures (Isbell 1997a; Isbell et al. 1991). The new social order may have been an intentional rejection of prior ideological and social principles, perhaps now focused more intensely on competing kin groups and political factions. However, most of these new compounds were never fully occupied or completed, and large portions of the site appear to have been abandoned while under construction (Isbell 1997a).

Evidence for a pan-Andean chronic drought beginning in the eleventh century CE, derived from the Quelccaya ice cap in Lake Titicaca’s northern watershed, has often been invoked as a proximate reason for the collapse of the Tiwanaku state (Ortloff and Kolata 1993; Kolata 1993, 1996; Binford et al. 1996). However, this explanation has been challenged on various levels (Erickson 1999; Calaway 2005), and others have argued for an independent collapse of the Tiwanaku political elite and the administrative hierarchy (e.g., Janusek 2008). Climate change has generally not been used to explain the collapse
of the Wari political system. However, while evidence from the capital city of Huari is ambiguous as to the causes of state collapse, at least some of the Wari (and Tiwanaku) colonies appear to have been abandoned due to local social and political conflict. In the Moquegua Valley, the only documented region of extended contact between the Wari and Tiwanaku states, Tiwanaku-affiliated settlements in the middle valley were sacked and destroyed sometime around the end of the tenth century, most likely by Tiwanaku-descended Tumilaca inhabitants of the upper valley (Williams and Nash 2002), and possibly spurred on by Wari control of upper valley water resources (Williams 2002). The Wari colony at Cerro Baul was ritually burned and abandoned around the same time or shortly after (Moseley et al. 2005; Williams and Nash 2002:259). In the Cusco region, Pikillacta and the site of Qoripata in the Huarco Valley complex were subject to intense burning following abandonment, possibly at the hands of native populations (Glowacki 2002; McEwan 1991, 1999, 2005) (see above). These events hint at significant social strife towards the end of the Middle Horizon in some regions colonized by the Wari, suggesting a rapid devaluation of cultural and religious authority which had been constructed and maintained over the previous 400 years.

Events in Huari and in the colonies are likely linked. One plausible scenario is that increased political competition and social disorder in the capital led to disruptions in the economic and political networks between the Huari and the colonies, which in turn exposed the colonies to conflict with local populations; these regional problems then further destabilized the political hierarchy in the capital city, creating a complex and recursive sequence of factors which eventually led to full collapse. The decline of the
Tiwanaku state and abandonment of its colonies may also have played an unknown role. However, in lieu of additional research, this scenario remains speculative.

Nonetheless, the collapse of the Tiwanaku and Wari states that created conditions in most regions of the highlands favorable for social and political balkanization, and higher rates of conflict in the Late Intermediate Period (1000-1400 CE; abbreviated LIP) (Covey 2008). The LIP is used for the purposes of this research to describe the period between the abandonment of the major Wari sites and the end of direct Wari cultural influence in the Cusco region, and the beginning of Inca imperialism. The appearance of characteristic Inca architecture and stonework, ceramics, metalwork and textiles, and religious and cultural practices serve as archaeological correlates for the latter, which seem to emerge in fairly rapid succession around or slightly before 1400 CE. Affixing a date to these is more difficult than it appears at first glance. Although Rowe defined the beginning of the Late Horizon as 1476 based on radiocarbon dates from the Ica sequence (Rowe 1962), he linked the emergence of Inca imperialism to the ascent of Pachacuti, which he dated to 1438 based on the dates provided by Miguel de Cabello Balboa (Rowe 1944, 1945). Since Pachacuti was the ruler responsible for the invention of most of the iconic forms of Inca material culture according to the chronicles, the linkage of Inca imperialism to this date made sense, following the logic presented in the historicist tradition. However, the problems with relying on the chronicles for reliable dates to a historical sequence of events have already been discussed.

Bauer has instead defined the beginning of the Late Horizon (or Inca Period) to the appearance of Classic Inca ceramics in the Cusco heartland, the production of which
is generally believed to begin around or slightly before 1400 CE (2004). Although the radiocarbon dates to support the appearance of Classic Inca (and contemporary) ceramics are less precise than perhaps would be desired, Bauer assumes that the heartland was fully integrated before the first imperial expansions, as the Inca state would have required a political, economic and territorial base from which to expand (Bauer and Covey 2002). Although this may not be strictly true (i.e., the Inca may have begun the first imperial expansions even as they were attempting to consolidate the final portions of the heartland), it does provide an additional, if indirect, basis for estimating the beginning of the imperial phase. The Pinagua and Muina ethnic groups of the Lucre Basin are believed to have been among the last groups to be integrated into the Inca state (ibid), and radiocarbon dates from the carbonized grass used to construct the roof of monumental LIP buildings at the site of Choquepukio in the Lucre Basin (believed to be burnt down as part of the final Inca conquest of the Lucre Basin – see below) provide a 2-sigma date of 1300-1460 CE (McEwan et al. 2005:275). Although this provides substantial range for archaeological interpretation, it is consistent with the radiocarbon dates for Inca ceramics (Bauer 2004) and architecture (Covey 2006), as well as for better dated contexts from the 2013 excavations at Minaspata (Chapter 5).

I follow the chronology established by Bauer for the Inca Period for the Cusco region, due to the roughly synchronous emergence of Classic Inca ceramics and Inca imperial practices in the heartland and elsewhere. Covey and others have argued for the appearance of Inca architecture (in the typical kancha form) as early as 1300 CE (Covey 2003:341, 2008:299; Bauer and Smit 2015), based on a radiocarbon date derived from a
sample taken from a rectangular building conforming to standard Inca forms, which contained multiple rectangular niches and windows, from the site of Pukara Pantallijlla (Covey 2006). However, there are problems with this date;\textsuperscript{46} while the earliest construction of Inca-style buildings may have occurred sometime in the fourteenth century CE, given the ambiguity of the radiocarbon date used as justification for this argument, claims that a distinctive state architectural style had been developed “by” 1300 (Bauer and Smit 2015:78), or as providing “a \textit{terminus ante quem} of c. A.D. 1300 for Inca state formation” (Covey 2008:299) are unsubstantiated.

Most of the Wari settlements in the Cusco region were abandoned around 1000 CE, including Pikillacta and the majority of the sites in the Huaro Valley complex. The sole exception seems to be Cotocotuyuc in the Huaro Valley, which has evidence for continued occupation into the Late Intermediate Period (Glowacki 2002; Glowacki and Malpass 2003). However, given the near abandonment of the capital city of Huari, it seems unlikely that the occupants of these colonies returned to the Ayacucho region. Rather, they may have relocated to other sites in the Lucre Basin and surrounding areas and integrated into existing communities, such as Minaspata, Choquepukio, Rayallacta, Rumirolca, and others, all of which show substantial occupations during the LIP and continuing into the Inca period. The similarities between Middle Horizon Wari ceramics and the Lucre ceramic style dating to the LIP suggest this may be the case, and McEwan

\textsuperscript{46} 2-sigma calibration of the date (555 ± 45 BP) provides nearly equal probability ranges of 1300-1370 or 1380-1440 CE (Covey 2006:161). A second date from a different rectangular structure at the same site provides similar date ranges, but with a higher probability skewed towards the later range (Sample AA47657, 519 ± 55 BP; 2-sigma calibration 1300-1370 [29.5\%] or 1380-1480 [65.6\%]) (Covey 2006:163). These calibration ranges indicate that the Inca buildings at Pukara Pantallijlla are as likely to have been built in the late fourteenth or fifteenth century, as they are to have been built as early as claimed.
and colleagues have documented architecture and political and cultural practices at Choquepukio that bear strong resemblance to those found at Pikillacta and other Wari sites (2002, 2005; Hiltunen and McEwan 2004) (see below for discussion). The abandonment of these colonies may have also led to population dispersal to other areas of the Cusco region as well: for example, Covey reports that a substantial number of large villages were established on high ridges in the Sacred Valley after 1000 CE, suggesting a large influx of population and a political restructuring associated with the decline of the Wari colonies (2006:85).

Figure 3.5. LIP and Major Inca sites in Cusco region mentioned in the text.

1=Pumamarca; 2=Wat’a; 3=Yunkaray; 4=Ancasmarca; 5=Warqana; 6=Markasunay; 7=Qhapaqancha; 8=Pukara Pantallijlla; 9=Choquepukio; 10=Minapsata; 11=Rayallacta; 12=Rumiqolqa; 13=Piñipampa; 14=Ollantaytambo; 15=Cheqoq; 16=Chinchero; 17=Huchuy Cosco; 18=Pisac; 19=Tipón; 20=Cusco
Settlement patterns for the first part of the LIP indicate substantial diversity in sociopolitical organization and a lack of regional political integration (Bauer and Covey 2002; Covey 2006; Kosiba 2010, 2011) (Figure 3.5). The Paruro region south of the Cusco Basin had a small population at the time, characterized by small villages and hamlets organized on the basis of economic interests rather than defense, and lacked evidence large-scale public architecture or substantial political complexity (Bauer 1992). Many Middle Horizon settlements in the Sacred Valley to the north of Cusco were abandoned shortly after 1000 CE, and most of the new villages were organized into multiple small settlement clusters in the larger side valleys (Covey 2006:81–96, 2014c). While many small villages and hamlets were present at lower elevations, most of the large villages were situated on prominent ridgetops at 4000 masl or higher, suggesting a possible focus on defensibility and a shift to a different subsistence strategy centered on broad-spectrum agropastoralism (Covey 2014c:130).

In contrast, settlement patterns in other areas suggest more complex political organization with limited territorial control. Large LIP settlements developed in the Lucre Basin to the east, particularly at Choquepukio and Minaspata, with both sites eventually reaching sizes larger than 20 ha. Monumental public architecture was also constructed in multiple phases in central locations at the Choquepukio site (see below) (McEwan et al. 2002, 2005). A large number of new settlements were established in the northern Xaquixaguana Plain, with the largest cluster centered on the LIP site of Yunkaray near the modern town of Maras, which reached a size of 20 ha. Unlike some of the large valley-bottom sites in the Lucre Basin, Yunkaray was surrounded by an extensive
network of lower-order sites, organized into a multi-tiered local settlement hierarchy and located in prime maize production land (Covey 2014e:113). An extensive complex of terraces was constructed during the LIP just west of Yunkaray, and the site is only a few kilometers away from salt pans and a rock quarry which was likely used for construction materials. As one of the most densely occupied parts of the Cusco region during the LIP, this cluster reflects a significant departure from earlier periods in the Maras area (ibid). A distinctive local ceramic style has also been identified at Yunkaray and the surrounding sites (Covey and Quave 2016). Ethnohistoric accounts suggest this area may have been home to the Ayarmaca ethnic group, who the chroniclers claimed were a powerful group who became important rivals to the Inca prior to the imperial phase (Sarmiento de Gamboa 1965:Ch. 34; see also Covey 2006, 2014e:122–125; Julien 2000; Quave 2012; Quave and Covey 2015; Rostworowski 1970). Similarly, settlement survey at the southern end of the Xaquixaguana Plain revealed a cluster of settlements centered on the long-standing village of Ak’awillay, which reached a size of 15 ha during the LIP; in contrast to the northern Yunkaray cluster, however, many of these settlements showed evidence of earlier occupation during the Early Intermediate Period and Middle Horizon. Mid-tier villages were located at the upper reaches of the higher-elevation kichwa ecozone, from which the highland areas suitable for camelid pastoralism are more accessible (Covey 2014e:120–122).

However, not all areas of the Cusco region were characterized by large changes in settlement patterns and social dynamics during the early Late Intermediate Period. In the Ollantaytambo region northwest of Cusco, Kosiba (2010, 2011) documents a settlement
pattern characterized by distinct clusters of small residential sites centered on long-standing towns, which served as the principal site for political and ceremonial activity for each settlement cluster. These towns were distinguished from other sites by a higher proportion of uniquely decorated ceramic serving vessels, idiosyncratic domestic architecture, mortuary complexes, and a longer occupational history predating the end of the Middle Horizon. The smaller residential sites surrounding these towns tended to be located within a short distance to either potential maize agricultural lands, or to the higher-elevation *puna* lands ideal for camelid pastoralism. A majority of these sites show continued occupation from the Middle Horizon into the Late Intermediate Period, though residential settlements that were newly established tend to maintain an apparent focus on maize production and pastoralism. While many of the towns possessed shared characteristics across different settlement clusters, small stylistic differences in the surface treatment of ceramics and in the construction of above-ground mortuary structures were spatially patterned across settlement clusters. This suggests that local elites staked claims to either ethnic identity, or localized authority and political autonomy (perhaps both), despite a shared set of political, social, and cultural practices – practices which were likely based on long-standing local social organization.

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47 Interestingly, Kosiba notes that many of these politically central towns did not necessarily correspond to large site sizes (2011:122). This is in contrast to the survey methodologies employed by other researchers in the Cusco region (e.g., Bauer 1992, 2004; Bauer et al. 2019; Covey 2006, 2014e; Covey et al. 2013), which relied primarily on settlement size to identify centralized places and estimate the degree of political complexity.

48 A few of these sites, such as W’ata, appear to have been established as early as the first millennium BCE (Kosiba 2011:131).
In contrast, the Cusco Basin itself saw considerable continuity in settlement patterns, characterized by valley-bottom settlements which appear to have been largely undefended (Bauer and Covey 2002; see also Bauer and Smit 2015). Population in the Basin increased dramatically following abandonment of Wari colonies, however, and many new settlements were established in more remote parts of the northern and southern basin. Most of the well-established valley-bottom settlements grew substantially, and the northern side of the basin was also transformed dramatically through the construction of extensive terracing and irrigation canals. Streams in the northern part of the Cusco Basin are entrenched because of steeper transition between the valley bottom and the mountains flanking both sides of the valley; this part historically had few agricultural settlements until the construction of these terraces, and large villages were established in these areas sometime in the early LIP (ibid:76-78). These terraces stretched almost to the Huatanay River and created thousands of hectares of improved agricultural land. Some of these lands may have been held by important lineage groups of the valley, while others may have been given to groups from outside the main valley, either migration from former Wari colonies, or forced resettlement after conquest later in LIP. Rather than seeking security through the abandonment of valley bottoms, or an increased reliance on defensive hilltop fortresses, groups in the Cusco Basin responded to the Wari collapse by placing a stronger emphasis on the agricultural and economic productivity as a criterion for site location (Bauer and Smit 2015:75).

49 The ceramic styles from surface collections used to date the sites in the Cusco Valley Archaeological Project (Bauer 2004) – namely, Killke style ceramics – are generally lacking reliable seriations which could be used to chronologically distinguish the appearance of these new sites (see below). As a result, some of these new sites may have appeared later in the LIP than argued by Bauer and Covey (2002).
Other evidence apart from settlement patterns also supports a state of intraregional variation, such as variations in architectural styles and site plans, mortuary practices, and the distribution of distinct ceramic styles, although many broad similarities exist across the region. Architecture is unevenly preserved throughout the Cusco region, but some distinctions can be made. Domestic architecture north of the Vilcanota River tends to consist of semicircular houses constructed of rough fieldstones, some of which are located on domestic terraces. Considerable heterogeneity also exists between sites, and architecture at some sites possesses features such as corbelled doorways, second story construction, and internal niches (Covey 2006; Kendall 1985). A similar pattern exists for the Ollantaytambo area: houses within the smaller residential sites are typically circular or D-shaped with uncoursed walls, and typically do not sit on terraces, but domestic structures at the politically central towns are typically D-shaped or oval in plan form (rectangular with rounded corners), often possess coursed stones or corner quoins, and are frequently situated on terraces and platforms50 (Kosiba 2010, 2011:129-130). There is also some evidence of rectangular domestic architecture in other parts of the Cusco region during the LIP (Kendall 1976, 1985, 1996); unfortunately, analyses of domestic architectural styles are currently lacking for most other areas of the Cusco region.

50 The distribution of these features may also have corresponded to towns and smaller residential sites north of the Vilcanota River and in other areas where architectural data was recorded, but this distinction does not seem to have been made as a part of the methodology of other settlement survey studies in the Cusco region.
Public buildings, planned plaza spaces and temples appear to be largely absent for sites in most areas surrounding Cusco, although poor preservation and lack of research focused on LIP architecture likely play a role in this absence of evidence. Monumental public buildings have been identified at the site of Choquepukio in the Lucre Basin (see below) (McEwan et al. 2002, 2005). While traces of LIP settlements in the Cusco Basin have largely been destroyed or covered by subsequent imperial Inca construction and more recent urbanization, given that administrative and religious architecture was established at multiple locations throughout the Cusco region following the incorporation of those areas into the Inca state, such large public buildings and plazas were likely constructed at the LIP settlement in Cusco as well, and probably at other towns in the region.

Variations in mortuary practices throughout region are also evident during the Late Intermediate Period, despite an apparent set of shared practices in some areas. Although understanding mortuary practices in the Cusco region is hampered by centuries of looting and destruction of above-ground tombs, variable preservation of subterranean burials, and poor documentation of Cusco-region mortuary practices in the Middle Horizon and earlier, a significant shift is apparent sometime during the early- or mid-LIP. A proliferation of above-ground, “open sepulcher” mortuary structures, known as chullpas, were constructed beginning in the LIP and into the Late Horizon in several areas around Cusco (Isbell 1997b; Bengsston 1998; Covey 2006:96–99; Hiltunen and

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51 In addition to urbanization and the destruction of some archaeological sites following Spanish conquest until the present day, many important LIP centers were likely subject to significant Inca construction following the incorporation of these areas into the Inca state; as a result, many examples of LIP public architecture were likely destroyed or covered during the imperial Inca phase.
McEwan 2004; Kosiba 2010:159–170, 2011). These open sepulcher mortuary structures also occur throughout the Peruvian and Bolivian highlands around the same time (e.g., Bongers et al. 2012; Isbell 1997b; Nielsen 2008; Stanish 2003), encompassing a wide variety of sizes, styles, and construction materials, and are particularly prevalent in the Lake Titicaca Basin. However, these *chullpa* structures did not occur uniformly across the Cusco region: Covey reports that these mortuary structures are far more common in the upper side valleys to the north of the Vilcanota River, but were not used during the LIP by groups located to the south of the river.\(^{52}\) Rather, these groups used a variety of different kinds of cliff tombs and cliff structures for the interment of at least some individuals\(^{53}\) (Covey 2006:96-98). The particular form of cliff burial used also seems to have been spatially patterned, according to settlement clusters.

A similar pattern of variability seems to be present in the Ollantaytambo area: a variety of tomb structures were used during the LIP, including above-ground *chullpa* structures, cliff tombs, *pirca*-constructed box tombs, and closed tombs (i.e., a niche or enclosure blocked off or sealed with stones), and the distribution of these mortuary structures clearly corresponded to different settlement clusters (Kosiba 2010; 2011:132-138). Despite these stylistic differences in tomb structures, mortuary *practices* associated with these structures were apparently similar across settlement clusters. Not only were clusters of tombs generally associated with principal towns in each cluster, but high

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\(^{52}\) This is consistent with the differential distribution of Killke pottery in the Sacred Valley, which is more common south of the Vilcanota River (see below); the Vilcanota River seems to have formed a general geographic barrier that promoted some cultural and possibly ethnic diversity (Bauer and Covey 2002; Covey 2006).

\(^{53}\) Cliff tombs were also used to the north, alongside above-ground mortuary structures, but in smaller frequencies (Covey 2006:98).
densities of decorated serving vessels were located within and near the platform spaces of mortuary complexes, suggesting that similar practices, perhaps feasting ceremonies, were staged in these spaces (2011:137). Similar categories of mortuary structures can also be found in other areas of the Cusco region, but the distribution and timing of the construction of these buildings has not yet been thoroughly investigated. For example, above-ground *chullpas* are generally found close to major settlements in the Lucre Basin, while cliff tombs appear to be more interspersed (Bauer et al. 2019); however, evidence indicates that at least some of these *chullpas* were constructed during the Late Horizon.\(^{54}\) Mortuary practices at Choquepukio may have been more unique during the Late Intermediate Period, and McEwan and colleagues (2002, 2005) suggest that the interment of important ancestors into the walls of public buildings – similar to some Wari mortuary practices found at Pikillacta (Verano 2005) – may have persisted at Choquepukio.

The distribution of pottery also suggests that the Cusco region was characterized by regional diversity at the beginning of the LIP, as several distinct ceramic styles were produced. These ceramics are typical of the south-central Andes in the centuries following the collapse of the Wari and Tiwanaku states, consisting mainly of simple wares decorated with geometric designs in black and red. The Killke style appears to have the largest area of distribution, although this may not have been the case early in the LIP. Production of Killke style pottery appears to have been centered on the Cusco Basin, and its distribution dominates surface assemblages within about 20 km or so of Cusco,

\(^{54}\) Radiocarbon dates collected from some of the *chullpas* at Minaspata as part of this project date to the Late Horizon and are probably Inca additions (Chapter 4, Appendix A)
dropping off north of the Vilcanota River and south of the Apurímac River\textsuperscript{55} (Bauer 1992, 1999, 2004; Covey 2006, 2014; Dwyer 1971; Rowe 1944). Rowe was the first to define the Killke ceramic style (1944), classifying it as a “pre-Inca” ceramic style (i.e., as the ceramic style produced and utilized by the people who eventually became the Inca) on the basis of both stylistic similarities with Classic Inca pottery, and on its stratigraphic position underlying and mixed with later Inca contexts. This had a profound impact on the study of the region and of the Inca state, allowing the distribution of Killke ceramics to be interpreted as mapping or representing the spread of the early pre-imperial Inca state as it expanded power and influence into the adjacent areas of the Cusco region throughout the LIP, eventually incorporating these communities of interacting but politically distinct ethnic groups around the Cusco Basin (Bauer and Covey 2002; Covey 2006). Although this approach has provided a number of substantial insights on the development of the Inca state, it has also been criticized on epistemological and evidentiary grounds (Chatfield 2007, 2010, 2015; McEwan 2006a:67, 199; Rivera Dorado 1971a).

Although the stylistic definition of Killke pottery has been both expanded and refined since Rowe’s initial research (Bauer 1999; Bauer and Stanish 1990; Chatfield 2007, 2010; Dwyer 1971a; Kendall 1976, 1985; Ixer and Lunt 1991; Lunt 1987; Rivera Dorado 1971a, 1971b, 1973), archaeologists still have a poor understanding of the modes of production, scale, and organization of Killke style ceramics, or how these changed.

\textsuperscript{55} Limited amounts of Killke pottery have been found north of the Sacred Valley, for example, at the sites of Pukara Pantillijlla (Covey 2003, 2006), Markasunay (Covey 2014) and Ankasmarka (Kendall 1985), but these are all associated with Inca ceramics and architecture and appear to be a result of later state expansion into these villages.
through time. Similarly, the precise chronology of this pottery style is still unresolved; although radiocarbon dates suggest this style begins to be produced sometime after 1000 CE (see Bauer 1999), Killke ceramics seems to lack stylistic variations that could be used as chronological indicators within the Late Intermediate Period, and the results of several excavations over the past several decades suggest that it continues to be used into the Late Horizon along with Classic Inca pottery (Chatfield 2007, 2010; Covey 2014c; Dwyer 1971a; Kendall 1984, 1985; Lunt 1987). Furthermore, Killke style pottery is often found in limited amounts in areas believed to have been integrated fairly late in Inca political formation, such as the Lucre Basin (McEwan et al. 2002, 2005; Dwyer 1971), and currently archaeologists have little understanding how this ceramic style was distributed over the course of the LIP. The presence of this ceramic style – albeit in smaller amounts – in the Lucre Basin is suggestive of regional interaction and trade even in lieu of political incorporation into the Inca state, but this remains to be demonstrated (Chapter 6).

A number of other local decorated LIP pottery styles have been identified to varying degrees in different areas outside of the Cusco Basin. In addition to the Lucre style (which has also been found in small percentages in the Cusco Basin and Sacred Valley, as well as at sites in the Vilcanota Valley to the south) (Covey 2014:14; McEwan et al. 2002), decorated pottery styles have been reported at sites north of the Vilcanota river in the Chongo Basin and nearby areas (Covey 2006, 2014:144); to the west and northwest of Cusco near Chinchero (Alcina Franch et al. 1976; Rivera Dorado 1972) and Maras (Covey 2014e:113–120; Haquehua Huaman and Maque Azorsa 1996; Quave
2012; Quave and Covey 2015); in the Ollantaytambo region at the western reach of the Sacred Valley (Kosiba 2010, 2011); to the south of Cusco in the Paruro region (Bauer 1992, 1999); and to the south of the Apurímac River (Kendall 1985) (Figure 3.5). Dean has reported that Cusco Valley LIP styles were uncommon in the upper Vilcanota Valley region near San Pedro de Raqchi, approximately 110 km southeast of Cusco, where local ceramics and Titicaca Basin pottery was slightly more common (2005). Many of these Cusco Valley LIP styles have somewhat overlapping distribution patterns, and depict designs and motifs which also appear on Killke style pottery; they have thus have been described by some as “Killke-related” styles (e.g., Bauer and Covey 2002). However, these styles have been, by and large, poorly studied and their significance in the larger regional interaction is unknown.

Overall, the sum of archaeological evidence regarding settlement, architectural, ceramic, and mortuary patterns across the Cusco region is consistent with the image of a landscape marked by considerable social and political variability and local balkanization at the beginning of the Late Intermediate Period. Yet despite this apparent focus on the localization of political authority, at least some of the areas described above seem to share a broad regional sociopolitical framework, creating a common way that people experienced, imagined, and perceived of their social and physical landscape – one created out of broadly similar political and cultural practices and mutually recognizable ways of expressing and performing local authority (Kosiba 2011). In some areas, people reacted to the collapse and abandonment of Pikillacta and the Huaro complex sites by actively maintaining preexisting socioeconomic and political practices; in others, by abandoning
old towns and villages and establishing new ones, focused on a different economic strategy, and perhaps reacting to an influx of new settlers integrating into local communities.

The abandonment of these Wari sites likely resulted in the larger sizes and political importance of sites in the Lucre Basin, such as Choquepukio and Minaspata, as some of these former Wari settlers (and, possibly, local populations subject to forced relocation) integrated into existing communities at these sites. It may also have led to the dispersal of some of the population into other parts of the Cusco region, particularly in nearby areas with evidence of population increase at the onset of the LIP, such as the Cusco Basin (Bauer 2004, Bauer and Covey 2002) and the Sacred Valley (Covey 2006). However, this is unlikely to fully explain the full scale of social changes in these areas (such as the widespread abandonment of EIP/MH sites in the Sacred Valley), nor the changes in areas less likely to have been affected by a hypothetical population dispersal, such as the hierarchical clustering of sites around Yunkaray near Maras (Covey 2014d).

This has led some scholars to rely on more traditional explanations of climate change and severe fluctuations in climatic patterns during the LIP to explain these shifts in settlement patterns in the early LIP (Bauer and Covey 2002; Covey 2006, 2014c:130). The Lake Marcacocha climate record documents a probable period of aridity developing in the Cusco region from about 880 CE until 1100 CE, followed by a several-centuries long period of increased temperature coupled with continued aridity (Chepstow-Lusty et al. 56)

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56 It is important to note that the precise chronology of these settlement pattern shifts (and other changes) is not fully understood; based on the surface collection data, in most cases it is possible to say that they occurred after the Middle Horizon and most likely before 1200-1250 CE, but may not have occurred immediately after the abandonment of the Wari colonies in the Lucre Basin and Huaro Valley.
While this long period of aridity would have resulted in lower rainfall and lake levels, the higher temperatures beginning around 1100 would have raised the elevation limit at which maize agriculture was feasible, potentially increasing the agricultural productivity of some lands and opening up others for farming. The higher temperatures also would have increased the quantity of melt-water from high-altitude glacial caps available for agricultural purposes (ibid:385). This would have offset the lower rainfall to some degree, but its agricultural potential would have been greatly enhanced by the construction of agricultural infrastructure, particularly terraces and irrigation canals. Indeed, evidence for increased terracing and canalization in the early- to mid-LIP in areas such as the Cusco Basin and near Yunkaray (Covey 2014d:113) suggests that the local socioeconomic response in these areas to the drier, warmer climate was to do just that. The resulting economic and agricultural security may have made voluntary alliance or politico-economic incorporation into the early Inca state more attractive for surrounding regions later in the LIP.

Other areas responded differently; these alternative responses to shifting climate conditions and the collapse of Wari colonies and networks might be dependent partly on the local ecological conditions, but also at least partly on the existing sociopolitical framework in any given area. Local autonomy was grounded in active claims to specific continuity within place and over time during the early LIP in the Ollantaytambo area (Kosiba 2011); as a result, declining regional Wari state power and broader ecological transformations had little effect on the settlement patterns and socioeconomic strategies. This was clearly not the case in areas characterized by widespread abandonment of
Middle Horizon sites and reorganization of settlement patterns: here, political authority seems to have been based on entirely different strategies and practices, in which the successful coordination of larger-scale socioeconomic practices and resources, and possibly regional competition, may have played a role.

Archaeological data regarding regional transformations occurring during the process of Inca state formation have been well reported elsewhere, but a brief summary will be useful here. Several scholars have argued that that the fundamental political organization undergirding the Inca state was in place by ca. 1200 or 1250 CE (Bauer 1992, 2004; Bauer and Covey 2002; Covey 2006, 2014; Rowe 1945), with the incorporation of different areas surrounding the Cusco Basin following in piecemeal fashion. To some extent, the evidence for this is based on the ethnohistoric accounts of Inca history, which appears to be consistent with the archaeological data in at least some areas. These accounts describe a process of state expansion utilizing a variety of strategies, including marriage alliances, economic hegemony, warfare, and intimidation.

Some areas may have allied themselves with the Inca polity fairly early on. For example, in the Paruro area south of the Cusco Basin, Bauer noted that while most sites contained Killke style pottery, little evidence exists for large sites or multi-tier settlement patterns at any time during the LIP or the Late Horizon, suggesting that the Inca state may have seen the people of this region as early allies and saw little need for extensive political or economic reorganization (1992).

The archaeological evidence indicates that the Inca state appears to have begun expanding into other areas outside of the Cusco Basin in a more intrusive fashion
beginning in the late LIP, targeting specific villages by establishing administrative and ceremonial architecture alongside or atop existing LIP buildings, but with little initial reorganization of the surrounding smaller settlements (Figure 3.5). Evidence of relatively early Inca-style architectural complexes appear at the sites of Warqana, south of the Sacred Valley (Kendall et al. 1992); Qhapaq Kancha in the Chit’apampa Basin (Covey 2006; Dwyer 1971), and Pukara Pantallijlla in the Chongo Basin north of the Sacred Valley (Covey 2006). At Pumamarca, a monumental walled precinct was built on a hillside adjoining the extensive pre-Inca settlement; similarly at the site of Huchuy Cosco (Q’aqya Qhawana) in the northern Cusco area, grandiose Inca monumental structures are separated from a nearby residential sector (Kendall 1996; Kendall et al. 1992). Kosiba (2010, 2012) describes a process of conversion for the site of W’ata in the Ollantaytambo area: parts of the existing local settlement were razed and a new Inca place was reconstructed over particular buildings and areas, and a massive perimeter wall was constructed around the new monumental precinct, creating an exclusive and sanctified Inca space. Some of the first areas brought under early Inca hegemony appear to have been in areas important for securing unimpeded long-distance trade routes (Bauer and Covey 2002).

As the Incas consolidated greater economic and political power, it began to incorporate surrounding areas more forcibly – some of which were already allied with the Inca polity, or under its hegemonic sway. Several ethnohistoric chronicles detail episodes in which the Inca rulers manufactured reasons to eradicate or relocate ethnic groups in the Cusco region in order to bring these areas under complete control, or to clear space for
the construction of royal estates (Bauer and Covey 2002). Eventually, the Inca heartland was brought under full control of the state, sometime around 1400 CE, at the end of a long process of political integration of surrounding areas and the evolution of different strategies of sovereignty. The Lucre Basin was apparently the final area brought under the aegis of the Inca state, forcibly integrated after an extended period of relations characterized by rivalry and hostility (see below). These practices of Inca sovereignty would later be expanded and applied as imperial policies throughout much of the Andes region as it came under the dominion of the Inca Empire.

The Late Horizon (1400-1532 CE) is typically defined by the shift from Inca state formation and the consolidation of the heartland to a focus on imperial expansion and the incorporation of neighboring regions. Imperial Inca polychrome ceramics, architectural forms, polygonal masonry and elaborate carving of stone outcroppings, and other forms of elaborate and aesthetically distinctive Inca material culture appear around the same time, either the late 1300s or early 1400s. These forms of material culture emerge rather suddenly as fully-formed objects of imperial domination. Inca ceramics in particular bear the marks of a rapid reorganization of existing production technologies and craftspeople for state purposes, creating a new and intentionally designed imperial style with a specific political and semiotic significance attached.

Dramatic transformations occur in the Cusco heartland associated with the emergence of imperial Inca material culture. Settlement patterns in some areas were completely reorganized, although Inca occupations appear atop or alongside existing settlements in others. New sites also proliferate throughout the region, suggesting an
influx of new groups of people, likely employed as mit’a laborers relocated for state purposes. In addition, new kinds of sites appear, including distinctive complexes of storehouses, many of which are located near but independent of domestic and ceremonial areas. Extensive sets of agricultural terraces were also constructed, often accompanied by canals to water these new agricultural lands. These transformations in the regional settlement patterns, as well as the massive construction projects dedicated to intensifying agricultural infrastructure, suggest that entire landscapes were reorganized and repurposed towards supplying the Inca state with the resources necessary to reproduce its economic and political authority (Kosiba 2018; Kosiba and Bauer 2013).

The Lucre Basin during the Late Intermediate Period and Late Horizon: Ethnohistoric and Archaeological Evidence

The preceding discussion of the social and political patterns of the Cusco regional community through time helps to establish a context for understanding the new data presented in the subsequent chapters of this dissertation. However, investigating the emergence and transformation of regional communities over the long-term requires a multiscalar approach, as discussed in Chapter 2. This means that a higher-resolution discussion of existing ethnohistoric and archaeological research regarding the Lucre Basin and Minaspata is also necessary. The period of time following the collapse of the Wari state is of particular interest, as it is both well-researched (in contrast to earlier periods) and bears particular relevance for understanding the processes of assembling the Inca state.
The Pinagua and the Muina

The Lucre Basin was home to the Pinagua and Muina\textsuperscript{57} ethnic groups, which appear to have been closely related and reportedly fought together against the Inca at various points prior to the main imperial expansions of the Inca state. The principal town (or \textit{llacta}) of the Pinagua is believed to be the site of Choquepukio, and the Muina were most likely based at the site of Minaspata. References to these group names in the ethnohistorical documents are relatively few, but enough can be cobbled together from the various descriptions of people, places, and semi-historical events to form a sketch of the Lucre Basin during the period of Inca state formation, and of the relationship between the Inca in the Cusco Basin and the Pinagua and Muina ethnic groups.

However, the best source of ethnohistorical data on this matter comes from a series of court documents dating from 1539 to 1573 (Espinoza Soriano 1974), in which some surviving remnants of the Pinagua and Muina mounted a legal dispute in 1571 against land seizures and labor abuses by the Spanish conquistador Diego Maldonado. In doing so, they claimed that Maldonado had been awarded their former lands in 1539 on the basis of a faulty claim, and requested that the original extent of their lands be returned to them. Although the official hearing the challenge, Diego de Porres, eventually ruled against the Pinagua and Muina, the various documents and testimonies presented delineate the original territory of the Pinagua (although the specific territory of the Muina

\textsuperscript{57} Also spelled “Mohina” or, less often, “Muyna” or “Moina” in the ethnohistorical documents. Garcilaso de la Vega (1989:124 [Bk. 2, Ch. XXVI]) refers to the area as “Muina, which the Spaniards call Mohina…” The name appears to refer to both the area of the Cusco region (the largest body of water in the Lucre Basin is still sometimes referred to as “Lake Muina” [\textit{La laguna de Muina}]) and to one of the ethnic groups who lived in the area.
is less clear) and reveal that shortly before the arrival of the Spanish in 1532, the penultimate Inca ruler Huascar had forced both groups off of their ancestral land as part of an attempt to construct a royal estate in the Lucre Basin.

Without a clear successor to the throne after the untimely death of the eleventh Inca, Wayna Capac, around 1525 CE (Rowe 1945), a succession crisis developed in which the kingship was given to his son Huascar with the assent of the Cusco royalty. His half-brother, Atahualpa, had also been in contention for the throne but may have ceded it to Huascar at the time of Wayna Capac’s death (Betanzos 1996:192–193). Atahualpa was ensconced in Ecuador at the time at the head of an experienced Inca army but lacked the support of much of the Cusco elite. Within a few years, however, tensions between the two factions reached a breaking point and Huascar raised and sent an army of his own to eliminate the potential threat from his brother. Atahualpa’s army was more experienced and quickly began turning the tide, making steady progress towards Cusco (Cobo 1979:165–166). Within a short period of time, Huascar had been captured and executed, along with his panaca (royal lineage) and many of his supporters in Cusco.58

Shortly after his ascension to the throne and at least three years before his capture in 1531 or 1532, Huascar commanded that the Pinagua be removed from their llacta (principal town) and lands (Espinoza Soriano 1974:163). The Pinagua were split and sent to the area around the town of Paucartambo far to the northeast of Cusco, and a closer (but today unknown) village called Urco-Urco somewhere in or around the Lucre Basin. The Muina were moved from their llacta to the original town of the Pinagua. Both groups

58 See D’Altroy (2015:107–113) for an extended discussion
were granted the use of limited amounts of lands near their relocations for sustenance, but apparently this was far less than they had been accustomed to under previous Inca regimes (ibid). The lands previously worked by these ethnic groups – while always ostensibly under state control – were now explicitly repurposed for both the use of the state for growing crops, and for the construction of Huascar’s estate, with labor brought in from outside the area to support both activities.

Other references also support the establishment of a royal estate for Huascar in the Lucre Basin, or at least refer to buildings belonging explicitly to him. While none of the ethnohistorical documents provide any justification or explanation for why the Lucre Basin was chosen by Huascar as a location for his estate, they do establish that Huascar was likely born there, which may have played a role. Recording details of the circumstances surrounding the death of Wayna Capac and the actions of Huascar after his father’s death, Martín de Murúa writes that

Later he [Huascar] left Cusco and went to build the buildings of Huascar, at the place where he had been born, which is next to the lagoon of Mohina, to enjoy himself, and commanded to be built the houses of Amaro Cancha and those of Colcampata for his residence and to serve as his seat.59 (1962:Bk. 1, Ch. 39)

A similar scenario was recorded by Miguel de Cabello Balboa in 1586. Shortly following the death of Wayna Capac, Cabello Balboa recounts:

59 “Luego salió del Cusco y fue a hacer los edificios de Huascar, el lugar donde había nacido, que es junto a la laguna de Mohina, para hacer su recreación, y mando hacer para su vivienda y asiento las casas de Amaro Cancha y las de Colcampata, donde vivió después un sobrino suyo, don Carlos Ynga.” Translation by author.
In these days, he [Huascar] went to do some fasting for the death of his father at the lagoon of Mohina (where Huascar had been born) and because many uprooted people were waiting, he commanded the houses at Amarucancha be built in great haste.\(^60\) (1951:Ch. 24)

Huascar apparently felt pressured to establish himself as the only true heir to his father’s throne after an unclear succession, and as a result, he quickly began work on various construction projects. These include the aforementioned buildings near Lake Muina in the Lucre Basin; the palace compound known as Amarucancha adjacent to the central plaza in Cusco (Bauer 2004:124-126); and possibly the palace of Colcapata located on the north side of Cusco near the base of the hill leading to Sacsayhuaman\(^61\) (ibid:111, 134).

The constructions at Lake Muina probably refer to the site of Kañarakay, a complex of 35 mostly uniform buildings built in the typical rectangular form of the Incas organized into two non-parallel rows (Figure 3.6), located on the southern edge of the lake in the Lucre Basin (now called Laguna Huacarpay or Laguna Muina) (D’Altroy 2015:216; Rostworowski 1970:253).

\(^{60}\) “En estos días se salió hacer ciertos ayunos por la muerte de su padre a la laguna de Mohina (donde el Guascar nació) y por que esperaba mucha gente forastera mando a gran prisa labrar unas casas en Amarucancha.” Translation by author.

\(^{61}\) Although these descriptions could be interpreted to suggest that “Amarucancha” and “Colcampata” refer to the buildings built near the shores of Lake Muina, two large palace complexes in Cusco were both referred to by these names during the early years of Spanish conquest of the city, and the construction of these palaces is generally attributed to Huascar.
The Pinagua and Muina endured their new circumstances under Huascar’s rule for at least a few years, until the resolution of the civil war between Atahuallpa and Huascar ended in the latter’s defeat. Two of Atahualpa’s generals, Quisquis and Chalcochimac, reportedly courted the support of the Pinagua and Muina after victoriously entering Cusco. According to the testimonies of various witnesses in the court case, the generals promised to allow the Pinagua and Muina to return to their ancestral towns and lands in return for their political support on behalf of Atahuallpa’s claim to the throne (Espinoza Soriano 1974). However, the order was never carried out; Atahuallpa was taken by

Figure 3.6. Inca structures at Kañarakay.
surprise at the sudden arrival of the Spanish conquistadores in 1532 led by Francisco Pizarro, and was captured almost immediately after his victory over Huascar. The Pinagua and Muina, unsure of the status of the rights to their lands, remained deported, while the yanakuna\textsuperscript{62} and other agents of the state assigned by Huascar abandoned their posts working the state lands in the chaos of the Spanish invasion. As a result, by 1536, when the Spanish had consolidated control and the first wave of encomiendas\textsuperscript{63} were awarded to various conquistadors, Diego Maldonado could – with some justification – claim the former Pinagua territories were abandoned and frame his appropriation of these lands as an effort to return them to productive capacity.

Maldonado began putting the lands back into use probably between 1536 and 1538, coercively drawing on remaining Pinagua and Muina to do so. He secured legal rights to this land in 1539, as part of a signed order issued by Francisco Pizarro (who also granted him other encomiendas in the Cusco region and in the province of Andahuaylas to the west as part of the same order) (Julien 2002). The encomiendas quickly made Maldonado one of the richest and most influential men in Cusco and probably throughout Peru, earning him the moniker “el Rico.” The Pinagua and Muina, whose labor had also

\textsuperscript{62}A specialized labor class consisting of personnel committed to serve the Inca personally for life.

\textsuperscript{63}Encomiendas were grants from the Spanish monarch to particular individuals, known as encomenderos, which awarded these individuals blocks of land and a monopoly on the labor of conquered natives (who were considered vassals of the Crown) from specific communities. Indigenous leaders were responsible for mobilizing the labor and assessed tribute (which could consist of metals, livestock or agricultural products, or other resources); in return, the encomendero was expected to take responsibility for instructing the indigenous peoples under his care in the Christian faith and in the Spanish language, protection from warring tribes or piracy, and suppressing rebellion against Spaniards. In practice, these latter responsibilities were often taken lightly, and in many cases the indigenous people were forced to do hard labor and subjected to extreme punishment and death if they resisted.
been granted to Maldonado as part of the encomienda on which they resided, had little recourse to reclaim their land at this point.

Rebellious activity on his encomiendas a decade later led Maldonado to seek additional legal authority, requesting further titles reaffirming his ownership over the land in 1553. He died shortly thereafter, passing the encomiendas near Cusco on to his son, Juan Arias Maldonado. In 1571, 18 years later, a representative of the Spanish viceroyalty named Diego de Porras passed through Cusco, conducting a census to carry out the program of reducciones64 being implemented by the recently appointed Viceroy Francisco Alvarez de Toledo. As part of his visit, de Porras also offered to hear claims and lawsuits of any kind, using the authority vested in him by the viceroyalty to serve as adjudicator. The Pinagua and Muina used this visit to make one final attempt at reclaiming their lands, arguing in the legal complaint offered to de Porres that the lands now “owned” by Juan Arias Maldonado had been theirs since “time immemorial;” that the only reason the lands had been found empty and unused by Diego Maldonado was because Atahualpa had been executed before he could return the lands to them; and that the return of these lands to their rightful owners would allow them to fulfill their own needs as well as those of the Spanish crown (through taxes levied) (Espinoza Soriano 1974:173, 184). On April 14, 1572, de Porras declared the lands in question to unequivocally belong to Juan Arias Maldonado. Shortly after, the Pinagua and Muina

64 Reducciones were settlements created by Spanish authorities, especially as part of the reforms in 1570 under Viceroy Toledo, designed and built according to European principles of town planning and populated by the forcible relocation of indigenous Andean populations. The purpose of these reducciones was to gather multiple groups together into a central location in order to tax and govern them more efficiently, as well as more easily instruct them in tenets of Christianity.
were relocated to newly established *reducciones*; the Muina, for example, were moved to the town of Lucre (along with other groups, such as the Yanamanche) (ibid:174-176).

**The Transformation of the Lucre Basin under Inca Rule**

The testimony given by various witnesses in 1571 also recount some of the actions taken by the Inca following their annexation of the Pinagua and Muina territory (Espinoza Soriano 1974:162). Much of their land was appropriated by the Inca state; they also ordered the establishment of an *aqllawasi*, or “House of the Chosen Women,” an institution which sequestered and trained young girls in religion, weaving, cooking, and *chicha*-making (Alberti Manzanares 1986; Costin 1998; Gose 2000; Silverblatt 1987:81–108); the *aqllawasi* may have been located at the site of Choquepukio (see below). The cloth they wove and the *chicha* they brewed were consumed in great amounts in festivities and sacrifices to the Sun, and the *aqllawasi* was a crucial component of the Inca imperial machinery. In addition, Garcilaso de la Vega (1989:Bk. V, Ch. XX, 286) wrote that Viracocha established a royal estate at Tipón,65 located on a high ridge on the north side of the Oropesa Basin, which may or may not have been in territory claimed by the Pinagua (see below for full discussion). Espinoza Soriano speculates that the Pinagua may have been among the ethnic groups placed in the land

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65 “A royal house was established for him [Viracocha Inca] between the defile of Muina and Quespicacha a pleasant spot, like all that valley, with the most delightful groves and gardens imaginable and ample facilities for the royal sports of hunting and fishing, since the Y’ucay River and many of its tributaries run not far to the east of the house. Having planned this house, the ruins and foundations of which can still be seen today, Prince Virachocha Inca returned to the city.” From this description, the interpretation of this estate as the site of Tipón is the most likely, though by no means certain.
around Tipón to care for the estate and provide food and other resources for his *panaca* (1974:162), although Tipón is never mentioned by this name in the original documents.

Other references indicate that the Pinagua and Muina were put to work for various state projects in and around their former lands. Garcilaso again states that the Muina may have been among those who carried the famous “Tired Stone” (*Collaconcho*) (1989:Bk. 7, Ch. XXVII, 464), a carved stone located in its final resting place above Sacsayhuaman; according to myth, the stone became fatigued on its way to be incorporated into the Inca fortress, shed bloody tears, and stopped in its tracks (D’Altroy 2015:274). Steve Kosiba has reported a historical document in Cusco which describes Pinagua and Muina laborers at the stone quarry of Rumiqolqa at the southern end of the Lucre Basin, likely put to work quarrying and shaping stones for Inca buildings in and around Cusco (personal communication, 2016); this assertion is tentatively backed up by other descriptions in the chronicles (see below). The Rumiqolqa quarry was probably controlled by the Pinagua and the Muina before the Inca conquest of the area, though the extent to which they exploited the high quality andesite in the quarry is unclear. Regardless, in addition to losing access to some of their former lands, segments of the Pinagua and Muina were also at least temporarily relocated for labor by the Inca state.

“66 Muchas de ellas llevaron de diez, doce, quince leguas, particularmente la piedra o, por decir mejor, la pena que los indios llaman Saycusca, que quiere decir cansada (porque no llego al edificio); se sabe que la trujeron de quince leguas de la ciudad y que paso el rio de Yucay, que es poco menor que Guadalquivir por Cordoba. Las que llevaron de mas cerca fueron de Muina, que esta cinco leguas del Cusco.”

175
The Boundaries of Pinagua Territory and the *Llactas* of the Pinagua and Muina

The precise boundaries of the Pinagua territory are ambiguous as described in the legal documents from 1539-1573. The Muina territory is not described with any precision anywhere, but can be assumed to be more or less adjacent to the Pinagua, most likely towards the southern side of Lake Muina, since they are frequently linked in the various chronicles. The legal *cédula* signed by Francisco Pizarro awards ownership of the Pinagua lands named “Yrvallosi, Chuquibuhío, Cochayaco, [and] Guambutio” to Maldonado (Espinoza Soriano 1974:179); although the locations of Yrvallosi and Cochayaco are unknown, Choquepukio and Huambutio can be found in the Lucre Basin. The legal testimonies given by the witnesses on behalf of the Pinagua and Muina clearly state that the original Pinagua territory ran from Huambutio on the eastern limit, where the Huatanay River meets the Vilcanota River (ibid:191-210). A hacienda was later established at that location with the same name, making the identification of the eastern border relatively simple (ibid:176; Instituto Geográfico Nacional del Perú n.d.) (Figure 3.7).

The documents define the western limit of Pinagua territory as “la angostura de Mohina”67; *angostura* is a Spanish word roughly translated as “a narrowing” and in this context, refers to a place where the walls of the Cusco Valley close and the valley bottom narrows considerably. The name *Laguna Mohina* (Lake Muina) was used to refer to the

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67 The original *cédula* in which Francisco Pizarro granted these lands to Diego Maldonado in 1539 defines this particular *encomienda* as “un asiento y estancia que se llama Pinagua, que es dende la angostura de Mohina para abajo como va el rio del Cusco hasta la junta del rio que va a Yucay” (Espinoza Soriano 1974: 181). (“...a territory and *estancia* called Pinagua, which is from the *angostura* of Mohina, following the river originating in Cusco [the Huatanay River] until it meets the river which goes to Yucay [the Vilcanota River].”)
larger of the two lakes in the Lucre Basin in the legal documents, and is still in use for the lake today.\textsuperscript{68} The “angostura de Mohina” and the name of the lake probably both come from their geographical association with the ethnic group (or vice versa).

Espinoza Soriano argues that \textit{la angostura} refers the most prominent narrowing in the Cusco Valley, located just west of what is now San Jerónimo, separating the Cusco Basin from the Oropesa Basin. Another possibility, however, is that “la angostura de Mohina” refers to the narrowing on the eastern end of the Oropesa Basin, separating it

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure3_7.png}
\caption{The Cusco Valley and Lucre Basin, with haciendas and archaeological sites mentioned in text.}
\end{figure}

\textsuperscript{68} One of two names used interchangeably: the other is “Laguna Huacarpay,” named for the nearby town of Huacarpay.
from the Lucre Basin. Another witness\textsuperscript{69} offered a statement describing the former principal town of the Pinagua\textsuperscript{70} as located “in the narrowing [\textit{angostura}] of the outlet of Lake Muyna...on one side, in some old buildings” (Espinoza Soriano 1974:161).\textsuperscript{71} This opens up the possibility that the “angostura” could refer to more than one place. There is evidence to support both views.

Geographically, the narrowing on the western end of the Oropesa Basin (separating it from the Cusco Basin) is much more prominent; the traversable area in the valley narrows considerably for a distance of about 2 miles (3.2 km), and the valley walls loom close, rising from the flat valley bottom at nearly vertical angles. The term “La Angostura” is still used to refer to this area today; a hacienda named “Hacienda Angostura” was built alongside the Huatanay River in this narrowing, suggesting the toponym was formally attached to this place at some point (Instituto Geográfico Nacional del Perú n.d.).

Espinoza (1974:166) also draws on a particular account given by Garcilaso de la Vega in 1609 to support his argument, concerning the flight of Viracocha from the city of Cusco upon hearing of the impending Chanka invasion. In his account, Viracocha fled the city to a place within the \textit{angostura de Muina}, which was later given to him by his son for his pleasure and recreation (Garcilaso de la Garcilaso de la Vega 1989:Bk. V, Ch. XX, 286). If accurate, this place may be the site of Tipón (Figure 3.8), a site located on the northern side of the Oropesa Basin on a ridge several hundred meters above the valley.

\begin{footnotes}
\item[69] Pedro Lampa, \textit{curaca} or leader of Yanamarche.
\item[70] Pinagua-Chaquematero, now known to be the archaeological site of Choquepukio (see below).
\item[71] “...estaua [estaba] en el angostura del desaguadero de la laguna de Muyna...en el un lado, en unos edificios viejos.”
\end{footnotes}
floor. Although archaeological remains dating to the Late Intermediate Period have been located (Bauer 2004:86), the majority of the existing remains at Tipón consist of incredibly well-constructed terraces, cut-stone Inca buildings, and interlocking canals (Wright and Wright 2006). Colonial land records state that Tipón and the land around it along the valley bottom were given to Viracocha Inca, who then transformed it into a royal estate (Bauer 2004:86–87; La Lone 1985; Wright and Wright 2006).

Figure 3.8. Standing surface architecture of Pikillacta (A, B) and Choquepukio (C, D).
If the account of Viracocha Inca’s flight from Cusco as told by Garcilaso is accurate, this supports the notion that the *angostura de Muina* (and the western limit of the Pinagua territory) was located between the Cusco and Oropesa Basins. The land documents reported by La Lone (1985) appear to coincide with Garcilaso’s account of the Viracocha story, but there are complicating factors. First, Garcilaso’s recounting of this story is the only one to locate Viracocha’s redoubt in the *angostura*. For example, Betanzos states that Viracocha left Cusco and went to a “refuge seven leagues from Cusco above a town called Calca. This hilltop stronghold and fortification was called Caquea [Caquia] Xaquixahuana” (1996:Ch. VI, 21). He later states that Viracocha died there and his mummy was kept there (ibid:Ch. XVII, 79).

Calca is located in the Sacred Valley north of Cusco, and the royal estate at Caquia Xaquixahuana – also called Huchuy Cosco (Figure 3.5) – has been located near the Inca site of Pisac (Niles 2015:237). The credibility of Betanzos’ account is strengthened by the fact that several other chroniclers report that Viracocha’s mummy was found and burned by the Spaniard Gonzalo Pizarro at Caquia Xaquixahuana. On the other hand, Garcilaso’s account is undermined by the fact that he confuses the main protagonists of the story, recounting that it was Viracocha’s father (Yahuar Huacac, 7th

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72 It should be noted that the connection between the royal estate at Caquia Xaquixahuana with Viracocha Inca is derived solely from Betanzos’ chronicle.

73 For example, see Sarmiento de Gamboa (2007:Ch. 25, 104); de Acosta (2002:Bk. VI, Ch. 20, 362); Cobo (1979:Bk. 12, Ch. 11, 132).
Inca) who flew the city, while Cusco was defended against the Chanka by Viracocha, instead of Pachacuti.\textsuperscript{74}

Other evidence, however, supports the placement of the western edge of Pinagua territory between the Oropesa and Lucre Basins. As described in other chronicles, the \textit{angostura de Muina} is usually associated geographically with lakes and marshes. For example, Cieza de León describes the following on his journey along the royal road from Cusco to La Paz [in modern-day Bolivia], which passes through the Lucre Basin:

> From the city of Cusco to the city of la Paz is 80 leagues, a few more or less, […] I say then that, leaving from Cusco by the royal road of Collasuyu, one goes until arriving at the narrowing of Mohina [\textit{la angostura de Mohina}], keeping the houses of Quispichanche on one’s left; the road goes by this place, after leaving Cusco, made of very wide pavement and strong stone. \textbf{In Mohina is a swamp full of bogs/quagmires}, which are the reason the aforementioned road is made with large foundations. There were large buildings in Mohina; now all lost and decrepit. […] Further beyond Mohina is the old village of Urcos.\textsuperscript{75} (Cieza de León 1967:Ch. XCVII)

This description closely matches the Lucre Basin, in which a shallow wetland covers much of the basin floor surrounding the two lakes. In contrast, the Oropesa Basin is conspicuously lacking in lakes or swamps.

\textsuperscript{74} A fact conveniently overlooked by Espinoza (1974).
\textsuperscript{75} “Desde la ciudad del Cusco hasta la ciudad de la Paz hay ochenta leguas, poco más o menos […] Digo pues que, saliendo del Cusco por el camino real de Collasuyu, se va hasta llegar a las angosturas de Mohina, quedando a la siniestra mano los aposentos de Quispicanche; va el camino por este lugar, luego que salen del Cusco, hecho de calzada ancha y muy fuerte de cantería. En Mohina esta un tremedal lleno de cenegales, por los cuales va el camino hecho en grandes cimientos, la calzada de suso dicha. Hubo en este Mohina grandes edificios; ya estan todos perdidos y deshechos. […] Adelante de Mohina esta el antiguo pueblo de Urcos.” Translation by author.
Similarly, several chroniclers\textsuperscript{76} consistently suggest that the \textit{angostura de Muina} (or alternatively, simply “Muina”) is located 4-5 leagues from Cusco. A “league” typically referred to the distance that could be covered by walking in an hour, and corresponds to roughly 3-4 miles or 4.8-6.4 kilometers, though the distance can vary depending on the topography. The description of this distance fits better with the Lucre Basin (a distance of 16 miles or 25.75 kilometers, roughly 4-5 leagues, from the center of Cusco) than it does with the \textit{angostura} linking the Cusco Basin and the Oropesa Basin (a distance of about 7-9 miles or 11.3-14.5 kilometers, or about 2-3 leagues).

The most likely scenario is that the term \textit{angostura} was a more general term referring to a narrowing or closing of the valley walls at the time the Spanish chroniclers were writing, only taking on a formal association with “La Angostura” separating the Cusco and Oropesa Basins at a later date. The descriptions and phrasing of the original legal documents suggest this may have been the case. The \textit{angostura de Muina (Mohina)} is used to refer to the western boundary of the Pinagua territory twice in the original land grant (Espinoza Soriano 1974:179, 181). However, three other uses of the term \textit{angostura} by the indigenous witnesses refer to the \textit{angostura} of the outlet of Lake Muina (ibid:204–206)\textsuperscript{77}. The drainage outlet of Lake Muina exits to the north and flows northeast until reaching the Huatanay River, which empties into the Vilcanota River two miles downstream. This description indicates that \textit{la angostura} is also used to refer the valley

\textsuperscript{76}Garcilaso de la Vega (1989:Bk. 2, Ch. XXVI, 124, Bk. 4, Ch. XXIV, 235); Sarmiento de Gamboa (2007:Ch. 23, 96, Ch, 25, 101) Bartolomé de las Casas (1939:Ch. XVI)
\textsuperscript{77} Andrés Quispi Rimache, natural del pueblo de Yanamanche: “angostura de la laguna de Muyna y desaguadero” (204); Don Pedro Lampa, indio natural del pueblo de Yanamanche: “el angostura del desaguadero de la laguna de Muina” (205); Don Juan Moya, curaca principal del pueblo de Muina: “la angostura desde el desaguadero de la laguna que se decia Chuquimatero” (206).
narrowing to the east, near Huambutio. In fact, only one reference to “Langostura” [La angostura] appears in the original legal documents; however, the full description reads “from the angostura which goes to the river leading to Yucay [the Vilcanota River]78” and is thus referring to the same valley narrowing. The term “angostura” may have been used to refer to up to three separate geographical features in the Cusco Valley alone during the early Colonial Period.

A third possibility is that the Pinagua could be using the opportunity of this court case to claim territory that was originally in their possession, several generations earlier, but had been lost to the Inca before the full conquest of the Lucre Basin. In other words, the Oropesa Basin may have been considered Pinagua territory earlier in the Late Intermediate Period, but the limits of their territory may have contracted through multiple stages of conflict with the Inca – perhaps when the Inca took control of the site of Tipón (possibly even from the Pinagua). However, I think the greatest likelihood is simply that Espinoza is incorrect in his assertion of the limits of Pinagua territory, and that the Pinagua territory (and hence, the Muina territory, probably on the south side of the lagoon – see below) is limited to the area within the Lucre Basin and the immediate area to the south.79 Regardless of the limits of the territory, however, the archaeological evidence indisputably places the largest and most complex settlements of the Pinagua and

78 “La dicha estancia e tierras nombradas Irvallosi, Choquebuhío, Cochayaco [y] Guambotio que están en el título y merced quel dicho capitán Diego Maldonado, difunto, e Juan Arias Maldonado, su hijo, tienen, son dende Langostura que va del río que va a Yucay al Cusco y toda aquella cañada y llano es de los dichos nombres […]” (Espinoza Soriano 1974:197).
79 Encompassing the modern town of Rayallacta and possibly the andesite quarry of Rumiqolqa; Lucre style pottery, the primary ceramic style presumably used by the Pinagua and Muina, has been recovered in substantial amounts from these areas as well (McEwan 1984; McEwan et al. 2002).
Muina in the Lucre Basin (with the possible exception of Tipón, for which the extent and nature of the LIP occupation is practically unknown).

Identifying the location of the *llacta* of the Pinagua and Muina groups is perhaps more important from an archaeological perspective than delineating the limits of their territory. Here, again, the legal documents presented by Espinoza are useful. The Pinagua *llacta* is referred to as “Pinagua-Chuquimatero” by Pinagua and Muina witnesses offering testimony; no archaeological site or place with this name has been located today, but the location is clearly described at by several different witnesses as “some ruins” near the drainage outlet of Lake Muina. The only large archaeological site that fits this geographical description is Choquepukio. Choquepukio is one of the largest Late Intermediate Period sites in the Lucre Basin and contains the most impressive standing surface architecture – most of which dates to that period – and I believe the site served as the primary center of Pinagua social, political and religious life prior to the Inca conquest of the Lucre Basin. While other locations were listed in the legal documents as Pinagua settlements, their locations are unknown and little remains of those settlements seem to

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80 For example, Andrés Quispi Rimache: “[…] en tiempos pasados estaua en el angostura de la laguna de Muyna e desaguadero estaua un pueblo que se decía Chuquimatero, donde están agora unos edificios viejos, y en el vivían los indios que agora viuen en el dicho pueblo de Úcro-Urco que se mudaron a él […].” (Espinoza Soriano 1974:204)

81 The legal documents do refer to Choquepukio [Choquibujio] a few times as a place apart from Pinagua-Chuquimatero, which creates a slight contradiction in assigning the archaeological site of Choquepukio to be the original Pinagua *llacta*. However, one of the court witnesses, Alonso Tito Atauchi, testified that “Choquipuquio” [Choquepukio] was a small pond or lagoon adjacent to the land and sandy areas of Huambutio, which was appropriated by Pachacuti as a private reserve for hunting ducks and other aquatic birds. The pond can be found today just to the northeast of the site of Choquepukio (Espinoza Soriano 1974:162). At some point, the names of these two features were probably conflated due to their spatial proximity, and the archaeological site (and former Pinagua *llacta*) assumed the name “Choquepukio.”
have survived. The archaeological data also supports the interpretation of Choquepukio as the original Pinagua *llacta* (see below).

The *llacta* of the Muina is more difficult to locate, as no descriptions in the 1539-1573 legal documents or in any other known records exist of the Muina land holdings or their primary settlement location. The association of the name “Muina” with the lagoon in the Lucre Basin gives us a clue. Realistically, however, Minaspata is the only other large, complex site in the Lucre Basin or Oropesa Basin areas, apart from Choquepukio and, possibly, Tipón. In fact, Espinoza argues that the Muina *llacta* was located at the site of Tipón (1974:167). However, this assertion has several problems. The first is – as discussed above – the Muina and Pinagua territory likely did not include any of the Oropesa Basin. Second, the site of Tipón may have been given to Viracocha Inca and his royal lineage (La Lone 1985). However, Huascar relocated the Pinagua and Muina populations specifically to create space for a royal estate at the former Muina *llacta* – which would have been difficult if the town had already been given to Viracocha. Not only was Huascar born on the shores of Lake Muina, but references to buildings constructed by Huascar in the chronicles describe buildings by the shore of the lagoon, which describe the Inca site of Kañarakay perfectly. The hillside of Cerro Combayoq (located just above Kañarakay; Minaspata is located on the slope of this hill) on the southern side of the lake is also a fairly continual archaeological zone, which – with the exception of Minaspata – consists of Inca constructions (Escalarayq, Urpicancha, Salteryq, and various buildings on the site of Minaspata) (Figure 3.12). Although not
supported by direct evidence in the historical or ethnohistoric documents, Minaspata is by far the best candidate for the location of the Muina *llacta*.

Regardless of whether these sites represent “the” primary settlements of the Pinagua and Muina, Choquepukio and Minaspata constitute the two largest and most important settlements in the Lucre Basin. Though located relatively near to each other, both sites have ready access to ample water sources and highly productive agricultural lands, and are located near main transportation routes that are easily controlled due to the topography. Lake Muina also represents a natural potential boundary for the territory of each group, with the Pinagua lands located north of the lake and the Muina lands located to the south. These sites approach high levels of size and population density for the Cusco region before the emergence of Inca imperialism, and represent the central focus of political, social and religious life for each group.

**The Pinagua and Muina as Inca Rivals**

As rich in information as the legal documents reported by Espinoza are, they barely describe the relationship between the Pinagua and Muina ethnic groups and the early Inca polity prior to the incorporation of the basin into the Inca state. However, several other references in various ethnohistoric chronicles characterize the Pinagua polity in the Lucre Basin and the Inca polity in the Cusco Basin as rivals. Bartolomé de Las Casas (1939) and Pedro Sarmiento de Gamboa (2007), two Spanish chroniclers who left lengthy records of Inca history gathered from informants in the 16th century, include anecdotes involving the Pinagua and Muina which suggest that their relationship with the
Inca was largely antagonistic. For example, Sarmiento de Gamboa describes battles against the Pinagua and Muina taking place on three separate occasions.

He [Yahuar Huacac Inca Yupanqui, 7th Inca] then sent men against the Mohina and Pinahua, four leagues from Cusco, and he appointed as his captain-general his brother Vicaquirao, who conquered these downs. He perpetrated many cruelties against them for no other reason than because they did not come to obey him voluntarily. (2007:Ch. 23, 96)

Later on, he records a slightly different version:

He [Viracocha] then turned on the towns of Mohina and Pinahua, Casacancha and Rondocancha, five short leagues from Cusco, that had already freed themselves even though Yahuar Huacac had wreaked havoc upon them. He defeated them and killed most of the natives and their cinchis [leaders], who at that time were also named Muyna Pongo and Guaman Topa. He waged this war and inflicted these cruelties on them because they said that they were a free people and would not serve him or be his vassals. (2007:Ch. 25, 101)

Sarmiento explains this apparent contradiction by explaining that some of these villages – again, giving the Mohina and Pinigua as examples – had rebelled and had to be subjugated multiple times in succession:

After Viracocha [8th Inca] appeared in Urcos, he returned to Cusco, and conceived [a plan] to begin to conquer and tyrannize the areas surrounding Cusco. […] This is why we repeatedly say that [the same] nation was subjugated by different Incas, such as the Mohina and Pinahua, who, although banished and subjugated by Inca Roca, were also oppressed by Yahuar Huacac, and then subsequently by Viracocha and his son Inca Yupanqui. (2007:Ch. 24, 99)
While reconstructing the historical sequence of events surrounding these battles is probably not worthwhile or even possible, Sarmiento presents a compelling image of simmering tensions and frequent violence between the early Inca state and the Pinagua and Muina. These two rivals seemed to have been locked in a prolonged conflict throughout much of the Late Intermediate Period.

A similar account is recorded by Las Casas when recounting some of the events in the life of Viracocha Inca:

….a certain Lord, named Pinagua, from the town of Mohina five leagues from Cusco, moved against him [Viracocha Inca] along with four other neighboring lords and went to war against him, out of pure envy. This took place near the village of Mohina, a long league from there [Mohina]; he [Viracocha] left victorious, subjecting the envious Pinagua and those who he brought to help him, where he remained lord of all of that province. The Indians say that he defeated them after having been provoked and attacked without just cause. This was the 8th Inca; he had a son who his wife named Pachacuti Inca Yupanqui, who was Lord after him.⁸² (1939:Ch. XVI)

While some other powerful early rivals to the Inca formed initial political alliances through marriages (Bauer and Covey 2002), there are no testimonies recorded of similar marriage alliances made with the Pinagua or Muina. The Inca were apparently ultimately victorious in their attempt to subjugate the Pinagua and Muina, most likely by Viracocha or possibly Pachacuti; but until they grew strong enough politically and militarily, the

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⁸² “…un cierto Senor, llamado Pinagua, del pueblo de Mohina cinco leguas del Cusco, por pura envidia movido junto consigo cuatro Senores otros comarcanos y vino a dalle guerra; la cual le dieron cerca del pueblo dicho Mohina cabe una legua grande que alli habia; el cual salio vencedor subjetando al envidioso Pinagua y a los que trujo en su ayuda; de donde quedo por Senor de toda aquella provincia. Dicen los indios que los vencio por haber sido provocado y acometido sin razon y justicia. Este fue octavo inga; tuvo hijo e su mujer que llamo Pachaquitiingayupanguí el cual fue Senor despues del.”
Inca found the Pinagua and Mohina together to be major rivals with substantial power in the region.

**The Muina and the Inca-by-Privilege**

Although the documentary record implies that the Muina and Pinagua were treated in similar ways after the conquest of the Inca, one factor confounds this assumption: the Muina (but not the Pinagua) are referenced as an “Incas by Privilege” group by Garcilaso de la Vega. The Incas by Privilege\(^{83}\) were composed of ethnic groups living in the Cusco region who were integrated into the Inca state early on, but were not ethnically Inca. This status was rooted in the Inca origin myths: the Inca by Privilege were conceived of being the non-noble indigenous occupants living in the area when the mythical founder of the Inca, Manco Capac, and his entourage arrived in the Cusco Valley. They were seen as Inca by people living outside the Cusco region, and thus gained privileges and social rank above them, directly below that of the Inca kin groups and citizens of Cusco. However, the Inca by Privilege were clearly at the lowest end of the social stratum *within* the Inca social hierarchy.\(^{84}\)

Detailed information concerning the ethnic groups of the region and the social relationships that bound them to the Inca of Cusco is provided by three indigenous chroniclers – Guamán Poma de Ayala, Garcilaso de la Vega, and Juan de Santa Cruz Pachacuti Yamqui Salcamayhua (Bauer 2004:15). Guamán Poma emphasized that the

\(^{83}\) Guamán Poma de Ayala called these people “\textit{uaccha} (poor) Inca of the Cusco region (1980:66), but it is clear he is referring to the same social class.

\(^{84}\) For a detailed analysis of the Inca by Privilege, see Bauer (1992, 2004).
Inca by Privilege formed the lower class of producers, who supported the ruling elite of the capital through their tribute. Although the accounts vary somewhat in detail, all three chroniclers accentuate the genealogical and geographical relationship to the Inca emperor and the capital as qualifying conditions.

However, they also state that this status granted the people special privileges and responsibilities. The Inca by Privilege held a wide range of administrative positions throughout the newly conquered territories of the empire (Bauer 2004: 22). They also played a critical role within Inca policies of colonization, and were often sent to recently incorporated areas to serve as ideal colonists loyal to the Inca state (ibid). These privileges could also include the right wear certain clothes and to cut their hair short, like the Inca of royal blood. Foremost was the privilege to pierce their ears and wear earspools, like the Inca nobles, albeit the ear piercing was smaller than allowed for the Inca, and they were only permitted to wear certain objects as earplugs according to their various names and provinces (Garcilaso de la Garciñaso de la Vega 1989:Bk. 1, Ch. 23, 56-57). According to Garcilaso de la Vega, “The Muina, Huáruc, and Chillque tribes were to have earplugs of the common reed the Indians called tutura” (ibid:57).

The chroniclers give slightly different lists of the ethnic groups who were granted the status of Inca by Privilege, and Garcilaso is the only one who lists the Muina among these groups. None of them list the Pinagua. Garcilaso has, at times, proven to be an unreliable narrator, despite his connection to the Inca nobility (he was the son of a Spanish captain and a noble Inca woman), and his assertion that the Muina were among

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85 Tutura probably refers to totora reed, which conveniently grows on the banks of Lake Muina (Chapter 7).
the Inca by Privilege should be taken with a grain of salt. However, the Muina may have gained privileged status after the defeat of the Pinagua and the conquest of the Lucre Basin. A third possibility is that Garcilaso conflated the two groups based on their geographically similar homelands; although he mentions the Muina and their location (near Lake Muina, or alternately, beyond the “angostura de Mohina”) several times, he does not refer to the Pinagua as a distinct ethnic group anywhere in his chronicle. In other words, Garcilaso may be describing all of the people living around Lake Muina (i.e., both the Pinagua and Muina) as Inca by Privilege, and linking both groups under the same name based on their geographical location, either out of ignorance, confusion or laziness.

The Archaeology of the Lucre Basin during the Late Intermediate Period

The collapse of the Wari political and economic networks, and the abandonment of the sites of Pikillacta and Huarco, around 1000 CE left a power vacuum in the Lucre Basin, which was quickly filled by the Pinagua and Muina with llactas established at Choquepukio and Minaspata. The documents discussed above suggest that the Pinagua and Mohina populations were more dispersed across a variety of smaller settlements throughout parts of the Lucre Basin (and possibly, the Oropesa Basin); regardless, Choquepukio and Minaspata are by far the largest in this area during the Late Intermediate Period and they clearly served as major political and religious centers for these groups.

As first noted by Ann Kendall (1985:337) and later by McEwan (1984, 2006b:94), strong evidence for some continuity of Wari ideology and statecraft appears
in both the architecture and ceramics at Choquepukio. New construction of monumental buildings in the core of the site (dated to between 1000 and 1100 CE) echo the Wari niched halls at Pikillacta and other Wari sites, which may have been used in feasting ceremonies, ancestor worship, and other political or religious events (McEwan et al. 2002:294; McEwan 2006b:95) (Figure 3.8). Like their Wari counterparts (McEwan 1998; McEwan et al. 2005), these niched halls contained human wall burials, offerings, and evidence of ritual feasting. Additional niched halls were constructed around 1300 CE (ibid: 95), and the full extent of the site during the LIP probably extends to around 30 ha. The plans of these monumental buildings were trapezoidal rather than orthogonal, as are the Wari complexes at Pikillacta; additionally, the niched halls at Choquepuquio apparently lacked second floors, although the walls were built high enough in many cases to support two or even three stories. Choquepukio is located on top of a hot spring which, to judge by the numerous and varied offerings recovered there, was a place of veneration from at least the Middle Horizon through the Late Horizon (Gibaja Oviedo et al. 2014; McEwan et al. 2002:297–298). The site seems to have expanded rapidly and extensively following the Wari collapse, and perhaps again around CE 1300 (Gibaja Oviedo et al. 2014; Hiltunen and McEwan 2004; McEwan 2006b; McEwan et al. 2002).

Little research focusing on the LIP has been done at Minaspata before the current study, although surface collections taken during the preliminary phases suggested the occupation was extensive during this time. However, Minaspata seems to have taken on a substantially different character than Choquepukio. The undulating topography of Minaspata is moderated by extensive terracing and landscape modification (Figure 3.9).
Although the thick foundations of large collapsed walls (probably formed using *pirca* construction techniques, consisting of unworked field stone held together with clay mortar to form thick walls) separate the surface of Minaspata into discrete spaces, standing surface architecture is rare and normally corresponds to Inca construction in form and technique.\(^8^6\) Large niched halls similar to those intact at Choquepukio appear conspicuously absent (although preservation may play a role in this as well).

\(^{86}\) The reason why at least some monumental walls at Choquepukio were partly preserved, while the walls at Minaspata appear to have collapsed, is unclear.
Figure 3.9. Surface of Minaspata.
Furthermore, the northeastern section of Minaspata was fortified with at least one thick wall, roughly half a kilometer in length and running along the north and east edges of the Eastern Sector, which would have taken considerable time and investment to build (Figure 3.10). This massive wall, which was probably constructed during the LIP, suggests that at least some conflict occurred in the Lucre Basin between the end of Wari occupation in this area and when the region was incorporated into the Inca state. Nevertheless, without further research, it is unclear whether the wall was built at the beginning (or, perhaps, middle) of the Late Intermediate Period as a response to the increasing conflict after the power vacuum of the Wari collapse, or built later in the Late Intermediate Period as a response to increasing hostility with the Inca pre-state.

Lucre style pottery is prevalent throughout the Lucre Basin, Andahuayllilas Valley, and Huaro Valley (McEwan et al. 2002:294, 2005:278; McEwan 2006b), and is also found in smaller quantities in surrounding areas in the Sacred Valley and further south, along the Vilcanota River valley (Covey 2014e:14; Dean 2005; Ixer, Lunt, and Sillar 2014; Sillar and Dean 2002). High densities can be found at large LIP sites in the Lucre Basin in particular, although Killke style ceramics often appear in smaller amounts as well. Although some researchers have proposed a Wari influence on Killke style ceramics (i.e., Bauer and Jones 2003:38), others suggest that the Wari influence on Lucre

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87 The western and southern sectors of Minaspata are situated atop an elevated bluff, with a fairly vertical cliff face making unwanted access difficult, rendering the need for a wall in these areas less important for protection. This wall was probably constructed during the LIP, as the ethnographic chronicles discussed earlier in this chapter suggest that at least some conflict occurred. While it is possible it was built earlier, during the EIP, defensive sites with EIP components are rare (Bauer 2004; Covey 2006, 2014) and it seems unlikely that such an investment of time and labor would have been necessary earlier than ca. 1000-1100 CE.
style ceramics during the Late Intermediate Period is even more prominent (McEwan et al. 2002, 2005; Glowacki 2005b). Specific Wari motifs can be identified on Lucre ceramics (although these are generally less well executed), and Lucre pottery approximates Wari pottery in form, decorative composition and aesthetic design more closely than does Killke or other LIP styles. However, Lucre pottery differs from Wari pottery in several other ways, including the production technology and tempering practices, and some motifs and decorative elements are shared by both Killke and Lucre pottery.

Figure 3.10. Defensive wall around Eastern Sector of Minaspata (courtesy of Brian Bauer).
Other large sites which are less well known appear to be established or expanded at the beginning of the Late Intermediate Period (Figure 3.11). Rayallacta and Combayoaq, two adjacent sites located on the natural terraces of the southern flank of Cerro Combayoq not far from Minaspeta, both reach a fairly large size at this time. Rayallacta consists of densely-spaced groups of standing architecture constructed in various styles scattered over an area roughly 300 by 500 meters (McEwan 1984:33) and at least 35 small stone chullpas or burial towers remain on the surface (Nohemí Vallenas and Ccanchi Atayupanqui 2010). Diagnostic pottery dating to the Middle Horizon, Late Intermediate Period, and the Late Horizon has been found on the surface of the site (McEwan 1984:34). Combayoq, separated from Rayallacta by the aqueduct and canal that runs to Pikillacta from further up the Lucre Valley (Valencia Zegarra 1996, 2005), appears to be much less densely inhabited, but reaches a size of roughly 6 hectares in area during the LIP. The site does not appear to have a primarily residential function, as a series of small terraces and small stone constructions lead up the slope from the valley bottom to several tombs formed in a series of massive rock outcroppings near the top of the slope. These tombs are made by walling up a natural crevice or hollow in the rock, sometimes with a small structure with an open doorway framing the entrance to the crevice, and appear to be similar in form to those described elsewhere during the LIP in the Cusco region (cf. Kosiba 2011:132-138). Sherds are rare at Combayoq but the site appears to date primarily to the LIP and possibly into the MH (McEwan 1984:34–39; Nohemí Vallenas and Ccanchi Atayupanqui 2010). Combayoq and Rayallacta may have been linked in some way during the Late Intermediate Period based on their proximity to
each other, and the differing architecture on each site suggests that each site may have had unique but complementary functions. They may even have served as a focus of mortuary interment and other related practices for multiple communities in the Lucre Basin.

Figure 3.11. The Lucre Basin and archaeological sites mentioned in the text.

8=Hacienda Huambutio; 3=Salteryoq; 4=Urpicancha; 2=Kañarakay; 7=Tantaestancia; 1=Mamacolla; 5=Combayoq; 6=Rayallacta; 9=Patapatayoq Terraces; 10=Escaleryoq Terraces
In addition to Choquepukio, Minaspata, Rayallacta and Combayoq, dozens of small sites appear throughout the lower basin slopes or bottom during the LIP, most of which are less than 1 hectare in size and consist of small surface scatters of ceramics (Bauer et al. 2019). The site of Mama Colla located on a small hill overlooking the town of Lucre appears to have been a ritual shrine or site of religious importance from the Late Formative until the Inca Period, as diagnostic ceramics dating to all time periods are found on the surface; the site remains one of the three principle huacas of the town of Lucre today (McEwan 1984:48). Although the andesite quarry at Rumiqolqa\textsuperscript{88} on the southern end of the Lucre Basin shows evidence mainly of Inca exploitation (Béjar Mendoza 2003; Ixer, Lunt, and Sillar 2014; Ogburn 2004; Protzen 1985) and extensive construction adjacent to the quarry by the Inca (see below), McEwan found small amounts of pottery dating to the LIP and this andesite may have been exploited in earlier periods (1984:32).

\textbf{The Inca Transformation of the Lucre Basin}

In a few cases, descriptions of interactions between the developing Inca state and non-Inca polities in the Cusco region recorded in the chronicles do appear to be confirmed by archaeological research, at least in broad strokes (Bauer and Covey 2002:855-857). This seems to be the case in the Lucre Basin as well, as the ethnohistorical accounts of animosity between the growing Inca polity and the ethnic groups in the Lucre Basin is supported by both shifts in the regional settlement pattern,\textsuperscript{88}

\textsuperscript{88} Following Ogburn’s spelling to distinguish between Rumiqolqa, the quarry, and Runicolca, the geological formation (Ogburn 2004:439, note 3).
and the way in which the Inca transformed the landscape and various sites within the Lucre Basin.

Regional settlement survey conducted in the eastern end of the Cusco Valley illuminates some of the interactions between the Inca and the Pinagua and Muina (Bauer 2004; Bauer and Covey 2002). In contrast to a pattern of dispersed settlements and a large clustering of hamlets and villages around the modern town of Huasao, which characterized this area in the Qotakalli Period and the Middle Horizon, the settlement pattern in the Oropesa Basin changed considerably at the onset of the Late Intermediate Period sometime after 1000 CE, when all valley-bottom settlements were abandoned after the decline of the Wari. A single nucleated settlement was established at Tipón on the north side of the Oropesa Basin, complete with an extensive defensive wall reaching nearly 6 kilometers probably built during this time. Bauer and Covey argue that the “complete depopulation of the alluvial terraces and valley floor between the Cusco Basin and the Lucre Basin represents the establishment of a well-defined buffer zone between rival polities” (2002:858-859). However, the presence of Killke pottery in the Lucre Basin and Huaro Valley further south (McEwan et al. 2002; Glowacki 2002) and of limited amounts of Lucre pottery outside of these areas (Covey 2014:14; Brian Bauer, personal communication 2016) suggests that despite the formal and military animosity with the developing Inca state, the Pinagua and Muina were still participating in the larger regional interaction sphere.

89 An earlier occupation dating to the Middle Horizon at Tipón has been proposed by Gordon McEwan (McEwan 1984:189; Wright and Wright 2006; see also Wilkinson 2013:379–383) but this has yet to be confirmed. Much of it would likely have been destroyed or covered by subsequent LIP and Inca constructions, as well as by substantial reconstruction of the Inca remains at Tipón.
The changes which occurred at Choquepukio following the Inca conquest of the Lucre Basin are perhaps some of the best documented in the Cusco region. Sometime around or slightly after 1430 CE, the roofs of the tall niched hall structures were burned down;\(^9\) some of these were abandoned, while others were reused after this destruction event (McEwan et al. 2005:266). A free-standing building, using close-fitted stones emblematic of the Inca architectural style, was constructed in one of the largest enclosures. A long set of terraces (Patapatayoq) running up the alluvial fan immediately above the main sector of Choquepukio may have been built at this time. A cluster of around 80 small, rectangular buildings was constructed near the central buildings, which contained Inca ceramics and have been interpreted as Inca Period housing (McEwan et al. 2002, 2005). Excavation has uncovered an unusually large number of weaving implements throughout Choquepukio, such as bone weaving tools, spindle whorls and needles of bronze, copper and bone (McEwan 2006) indicating very intensive cloth production which may be associated with the aqllawasi established at Choquepukio (see Espinoza Soriano 1974). A 300-meter row of Inca storage houses was constructed on the hillslope above Choquepukio, creating abundant storage capacity for food, textiles and other craft products, and a variety of other goods and materials. Arminda Gibaja and

\(^9\) This may have occurred slightly earlier: the carbon sample used to date this event came from the carbonized roof of Structure A1 (one of these niched hall structures), which seems to stratigraphically mark the end of the Late Intermediate Period at Choquepukio and the beginning of Inca rule. This event was interpreted as an intentional burning of these structures as a result of the Inca conquest (McEwan et al. 2005:266). However, the radiocarbon date from this sample ranged from 1300-1460 CE (Beta 147561) (ibid:275), indicating that it may have occurred slightly earlier.
colleagues (2014; Andrushko et al. 2011) also discovered a possible *capacocha* event,\(^{91}\) consisting of child burials accompanied by Inca pottery and gold, silver, cloth and objects made from *Spondylus* shell, located near a stone interpreted as a *huaca*. Finally, there is some evidence to suggest that a small center for the production of Inca pottery may have been placed at Choquepukio (Hiltunen and McEwan 2004:245; McEwan, personal communication 2016).

In summary, the archaeological evidence suggests the Inca conquered Choquepukio around 1430 CE or slightly before, first destroying the ideological and political power of the Pinagua elite by burning the roofs of the structures where the Pinagua ancestors had been venerated, and appropriating their *huaca* with *capacocha* sacrifices. This was followed by systematically transforming this site of Pinagua power into a “factory” for state cloth, pottery and other goods, while simultaneously extracting large amounts of labor from the occupants of the area for new constructions around the

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\(^{91}\) The *capacocha* ceremony was an important sacrificial rite performed by the Inca that typically involved the sacrifice of children. This ceremony was described by several chroniclers (Betanzos 1996:42, 132; Cieza de León 1984:100–101; Cobo 1979:235–237, 1990:54, 58–60, 67, 70–73, 78, 80–82, 154–157, 170; Sarmiento de Gamboa 2007:69, 119, 138, 140, 144, 227, 233), although the most detailed descriptions are provided by Molina (2011:77–83) and Cobo (1990). Boys and girls of about 10 years of age, recruited from any region of the empire and apparently chosen for their physical perfection, were sent to the capital, along with fine cloth, camelids, and figurines of gold, silver and *Spondylus* shell. The boys and girls were dressed in finery and matched up in ritual marriage. After sacrifices and ceremonies in the capital, the children were escorted in ritual procession by priests to important shrines throughout the empire (often hundreds of kilometers from Cusco), where they were killed and interred with ritual offerings.

Nominally, this ceremony paid homage to the Creator and the Sun, but as McEwan and Van de Guchte point out, the *capacocha* also served a political purpose, reinforcing the integration of the different regions of the empire, as well as the Inca lineage, Cusco’s social structure, and pan-Andean shrine networks (1992; see also D’Altroy 2015:278). These events were reportedly invoked at pivotal political and military moments, such as the ascension or death of a monarch. Several of these events have been recovered archaeologically from high-altitude mountain shrines (Reinhard 1993, 2005; Reinhard and Ceruti 2005), although the descriptions in the Spanish chronicles clearly indicate that they occurred throughout the empire, particularly around Cusco (Besom 2009), and high-altitude contexts should not be a defining criterion for the identification of a *capacocha* event (Andrushko et al. 2011).
(former) Pinagua territory and elsewhere. The Muina were also almost certainly involved in this labor extraction, though more research needs to be done at Minaspata to fully understand the timing and nature of the Inca transformation of the site (Chapter 5).

Labor and land for staple crop production were not the only resources extracted from the Lucre Basin, and evidence from the Rumiqolqa quarry indicates that the Inca invested considerable resources in extracting high quality andesite for use in imperial construction projects. Extensive new buildings were constructed following Inca canons, including three large kallanka halls (Farrington 2013; Gasparini and Margolies 1980) constructed at the site of Rumiqolqa adjacent to the andesite quarry pits, along with over 40 other structures (Protzen 1985; Ogburn 2004). The Rumicolca andesite formation has three main outcroppings around the Lucre Basin: at Rumiqolqa, between Choquepukio and the town of Oropesa, and on the southern side of Lake Muina near Minaspata. There are also nearby andesite outcroppings at Tipón, and closer to Cusco at Huaccoto92 (Hunt 1990; Ixer et al. 2014a, 2014b). Rumiqolqa shows extensive evidence of Inca quarrying and stone-shaping for use in construction (Béjar Mendoza 2003; Ogburn 2004; Protzen 1985), as does Huaccoto, although this source seems less extensively exploited than Rumiqolqa (Miranda Ayerbe and Zanabria Alegria 1994; Tovar Cayo 1996).

Along with diorite, limestone, and to a lesser extent local quartzite and granite, andesite played a pivotal role in the construction of imperial Inca buildings, particularly in Cusco where it was favored over other stone materials (Farrington 2013:23). While dressed stone was being used in a small number of buildings in the Cusco region during

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92 While Huaccoto is the closest source of andesite to Cusco, it is also located on top of a mountain on the north side of the Cusco Basin, making access potentially more difficult than other sources.
the LIP, this practice increased exponentially when Cusco was substantially remodeled at
the start of the Late Horizon on a new oriented grid (Bauer 2004; Farrington 2013, 2018;
Vranich et al. 2014). The use of andesite blocks, finely finished and parallel-sided, to
build the Coricancha, the Casana, and the Hatun Cancha in central Cusco represent a
dramatic change from the earlier use of green diorite boulders and limestone, which had
been flattened on one or two faces. Stone from Pinagua/Muina area may have been used
in the construction of imperial buildings at Cusco. Describing Pachacuti’s personal
involvement with the design and rebuilding of Cusco, Betanzos writes of the design of
the Coricancha:

[…Pachacuti] went to a town called Salu, almost five leagues from the city, where
they have a quarry. He measured the stones for building this temple, after which
the people of the nearby towns worked the stones pointed out to them until there
were enough to build the temple.\(^93\) (Betanzos 1996:45, Ch. XI)

Salluc was one of the estancias given to Diego Maldonado in 1539 (Espinoza 1974:179),
and may correspond to one of the communities around the Rumiqolqa quarry. Garcilaso
claims that he saw a model of the city of Cusco at “Muina, five leagues to the south of
Cusco\(^94\)” which he describes as made of “clay, pebbles and sticks, done to scale with the
squares, large and small; the streets, broad and narrow; the districts and houses, even the
most obscure; and the three streams which flow through the city, marvelously executed”

\(^{93}\) “…fue a un pueblo que dicen Salu, que es casi cinco leguas de esa ciudad, ques do se sacan las canteras,
y midio las piedras para el edificio desta casa, y ansi medidas, de los pueblos comarcanos pusieron las
piedras que les fue señaladas y las que fueron bastantes para el edificio desta casa.”

\(^{94}\) “El modelo que digo que vi se hizo en Muina, que los espanoles llaman Mohina, cinco leguas al sur de la
ciudad del Cusco.” (Garcilaso de la Vega 1960)
The location of this model in Muina is curious, but may be related to need to quarry and shape blocks with an eye towards their final placement in the buildings in Cusco.

Additionally, the archaeological evidence of extensive Inca quarrying at Rumiñqoqlla, and the infrastructure to support it, suggests that some of the stone was used in Cusco: fully and partially formed stones left on the surface at Rumiñqoqlla were clearly being shaped in preparation for use in Inca fitted-stone buildings (Protzen 1985).

Rumiñqoqlla is arguably the most accessible location to quarry large, high-quality andesite blocks for Cusco, and is the only place with large enough blocks of homogenous stone without cracks, crystals and flaws. The dense, dark stone used in the Coricancha resembles the stone from the quarry at Rumiñqoqlla and may have come from there (Bill Sillar, personal communication 2016). Unfortunately, recent attempts by Bill Sillar and Dennis Ogburn to conclusively link the andesite in imperial Cusco to various quarry sources using a portable XRF machine (pXRF) has thus far been unsuccessful, as the chemical signatures from the Rumiñqoqlla, Huaccoto and Tipón andesite sources are quite similar (ibid). However, the Inca clearly invested considerable resources and effort into extracting andesite from the Lucre Basin, which would not have been possible until the Pinagua and Muina were conquered and fully integrated into the Inca state. If the final conquest of the Lucre Basin took place around 1400-1430 CE, as the archaeological

(1989:Bk. 2, Ch. XXVI, 124). The location of this model in Muina is curious, but may be related to need to quarry and shape blocks with an eye towards their final placement in the buildings in Cusco.

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95 “Yo vi el modelo del Cusco y parte de su comarca con sus cuatro caminos principales, hecho de barro y piedrezuelas y palillos, trazado por su cuenta y medida, con sus plazas chicas y grandes, con todas sus calles anchas y angostas, con sus barrios y casas, hasta las muy olvidadas, con los tres arroyos que por ella corren, que era admiración mirarlo.” (Garcilaso de la Vega 1960)
evidence from Choquepukio suggests, then much of the rebuilding of Cusco into an imperial city may have not have taken place until the first half the 15th century.

Considerable effort went into building the necessary infrastructure for the purposes of subjugating the communities of the Lucre Basin and extracting all of this labor, food and material, and an explosion of Inca construction occurred at the beginning of the Inca Period. New Inca construction or ceramics can be found at all of the LIP sites in the Lucre Basin, and many new small and medium Inca sites were established at previously uninhabited locations (Bauer et al. 2019). The site of Tantaestancia, a small grouping of rectangular enclosures in the Inca style (some of which were possibly storehouses) and two small circular structures was built on the hillside southeast of Pikillacta (Kendall 1976:95; McEwan 1984:20–21; Nohemí Vallenas and Ccanchi Atayupanqui 2010:223–227). A series of semicircular terraces and high-quality Inca buildings also appeared at Urpicancha (Tokue and Kumai 2007), near the lake edge not far from Minaspata (Figure 3.12). Additionally, small group of Inca k anchas were constructed at Salteryoq on the southern hillside overlooking Minaspata (Chapter 5), perhaps as a small administrative site (Figure 3.13). The Inca kanchas built at Kañarakay at the edge of the lagoon are generally associated with Huascar and his royal estate, though they may have been built under earlier the reign of Wayna Capac (Betanzos 1996:176).

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96 McEwan called this site “Olleriayoq” but is listed as Tantaestancia on archaeological maps of the basin created by the INC as Tantaestancia (Nohemí Vallenas and Ccanchi Atayupanqui 2010:223).
97 The Inca buildings at Salteryoq are continuous with the remains at Minaspata, and were probably constructed as part of the Inca occupation of the Lucre Basin, perhaps as administrative buildings overlooking Minaspata and much of the Lucre Basin. I have included these as part of the Southern Sector of Minaspata (Chapter 1, 5).
Figure 3.12. Aerial image of Urpicancha from the Shippee-Johnson expedition in 1931 (Denevan 1993).
Escaleryoq terraces visible on left. Courtesy of American Museum of Natural History Research Library, Department of Special Collections (neg. no. 334824).

Figure 3.13. Inca style structures at Salteryoq (Southern Sector of Minaspata).
Two large sets of terraces at Amarupata and Miskipata, on the southern side of the basin near the town of Lucre, were probably also built by the Inca, and a third set of rectilinear terraces called Escaleryoq was built on the north hillside of Cerro Combayoq adjacent to Urpicancha. At least five major canals brought water to various parts of the Lucre Basin (Valencia Zegarra 1996, 2005); these have typically been argued to be constructed by the Wari state during the Middle Horizon, as the longest canal appears to have brought water directly to Pikillacta via the aqueducts near Combayoq and Rumiqolqa. Two canals in the Lucre Basin would have supplied water to these terraces, raising the possibility that the Inca may have built or redirected one or more of the canals (Figure 3.14). However, others have argued that at least some of these canals may have been constructed by the Inca state in the fifteenth century (Bauer et al. 2019). These canals have not been directly dated and existed independently of each other, meaning that they could have been constructed at different times.
The royal Inca road (*Qhapaq Ñan*) to Collasuyu from Cusco was built through the lower Lucre Basin before heading south following the Vilcanota River (Instituto Nacional de Cultura [INC] 2007), requiring extensive engineering and construction to traverse the wetlands covering the floor of the basin (Cieza de León 1967:Ch. XCVII), and the aqueduct near Rumiqolqa was remodeled and repurposed as a “gateway” to the Inca heartland. The net effect of these intensive constructions in a relatively short period of time was not only to create a massive infrastructure designed to serve Inca state
practical and propagandistic needs, but would have also drastically altered the day to day experiences and perceptions of the Pinagua and Muina remaining in the basin until the reign of Huascar, actively and emphatically reinforcing the dominance of the Inca state. The fact that they probably would have supplied much of the labor towards these projects would have only reinforced this experience.

**Summary of the Archaeology of the Lucre Basin**

Unlike the most of the rest of the Cusco region, the people of the Lucre Basin seems to have been more directly influenced by the longevity and intensity of the Wari occupation during the MH, and maintained certain elements of the material culture (if in an imperfect way) into the Late Intermediate Period. Interestingly, the two largest sites during this period – Choquepukio and Minaspata – seem to have taken different paths in this regard, as the monumental architecture at Choquepukio apparently referenced Wari architectural forms and construction methods (and, possibly, cultural practices) much more explicitly. Regardless, the cultural differences between the people of the Lucre Basin and the greater Cusco region may have contributed to the greater animosity between the Pinagua/Muina polity and the developing Inca state than was apparently present elsewhere, in which political alliances with the Inca were more likely to be cemented through marriage gifts earlier in the Late Intermediate Period (Bauer and Covey 2002).

This animosity seems to have grown throughout the Late Intermediate Period with multiple conflicts documented in the ethnohistorical record and suggested by the
presence of defensive structures at Minaspata, despite the ceramic evidence pointing towards some degree of participation in the larger Cusco regional interaction sphere. These violent conflicts culminated in the Inca conquest of the Lucre Basin at a late stage in regional political incorporation, probably around 1400-1430 CE, which is supported by new evidence and radiocarbon dates from Minaspata (Chapter 5, Appendix A). The Inca state wasted no time in a large-scale modification of the towns and the landscape of the basin and extraction of significant labor and resources for a variety of local and non-local imperial projects. This transformation would have significantly altered the day-to-day experiences and perceptions of the local populations, radically transforming the affective field entangling the people with their landscape, and was instrumental in the Inca hegemonic project of creating subjects out of a formerly rebellious polity. This project was ultimately successful enough that Huascar moved the Pinagua and Muina off of their traditional lands a century later (probably shortly after his ascension to the throne, sometime between 1525 and 1530 CE) and greatly restricted the amount of resources available to them to supply for their own needs, with no recorded evidence of rebellious activity. Indeed, even given a brief period of chaos following the death of Huascar and Atahualpa, and during the early years of the Spanish invasion of Cusco, the Pinagua and Muina did not take advantage of the situation to reclaim their former lands. While Diego Maldonado took advantage of this situation beginning in 1539, a few years after the Spanish secured control of Cusco, it was eventually rendered moot by the program of reducciones in the 1570s carried out by Viceroy Toledo, as the Muina and remnant
Pinagua populations were moved into the new town of Lucre and other *reducciones* (Espinoza 1974:175-176).

**Previous Archaeological Research at Minaspata**

Minaspata was first recorded by Manuel Chávez Ballón, who showed the site to John Rowe in 1954 (Dwyer 1971a:71). The first excavations were undertaken by one of Rowe’s students, Edward Dwyer, in 1969. The focus of Dwyer’s dissertation was to document pre-Inca Killke pottery and, if possible, identify chronologically significant stylistic changes in Killke ceramics over the course of the Late Intermediate Period (1971a). Towards this end, he excavated test units at three sites across the Cusco region believed to have Killke pottery based on previous excavation and surface collection: Sacsayhuaman, located on a bluff overlooking the city of Cusco; Pucara Pantillijlla, a fortified hilltop site overlooking the modern village of Cuyo Grande near Pisac in the Urubamba valley; and Minaspata.

Dwyer excavated five 2x2 meter test units across the western sector of Minaspata, but only found Killke pottery in Unit Four. The other units were not discussed in his dissertation; however, he later reported finding significant quantities of Early Horizon (Chanapata and Marcavalle style) material in the lower levels of his other units (1986). Two stone figures were also recovered from surface contexts (Dwyer 1971b; Valencia Zegarra 1981), described as “Chanapata” in style and possibly related to the Yaya-Mama Religious Tradition from the Lake Titicaca Basin, which lasted from about 800 BCE until ca. 400-500 CE and is generally contemporary with Chanapata pottery in the Cusco

Unit Four was located in an area with heavy surface concentrations of later ceramic styles, primarily Inca, Killke, and “regional, or at least related, variations of these styles” (Dwyer 1971a:72); this statement probably refers primarily to Lucre style ceramics, which had not been defined yet. In the upper levels, a probable collapsed wall overlaid a level which contained numerous fragments of baked clay, adobe bricks, and burned wood charcoal and ash.\textsuperscript{98} Dwyer found a feature below this level which he interpreted as an oven, and immediately below this a possible burial pit dating stratigraphically to the LIP with no associated grave goods. The upper levels (Levels A-C) contained both Inca and Killke\textsuperscript{99} mixed together, while Levels D and E contained only Killke and Killke-related sherds (ibid:75). The lowest level contained “numerous very large stones, and the refuse between the stones contained Chanapata style pottery unmixed with any later types” (ibid:73). Dwyer found no evidence of Middle Horizon or Early Intermediate Period occupation in this unit.

After completing a survey of the eastern end of the Cusco Valley conducted with Karen Mohr-Chávez and Sergio Chávez, Dwyer returned to Minaspata for more extensive excavations in 1980-1981 along with Jane Dwyer and a field school of

\textsuperscript{98} Although this discovery led Dwyer to claim that the “upper levels suggest the violent destruction of some kind of building by fire” (1971a:74), no evidence of large-scale, site-wide destructive event was found in the 2013 excavations towards the end of LIP contexts; as such, this discovery should probably be restricted to the unit which Dwyer excavated – or minimally, the area around it – and not generalized over the entire site, as some authors have done.

\textsuperscript{99} From the context of the text, Dwyer appears to be including “Killke-related” styles into this description. Based on photographs he took during these excavations, some of these Killke sherds and vessels would now be classified as Lucre (Melissa Chatfield, personal communication 2012).
archaeology students from Cusco (Figure 3.15). Unfortunately, the results of these excavations were never published. Dwyer provided me with some of the notes from his unpublished excavations, which were helpful in planning and interpreting my own work there in 2013. The notes were too incomplete to fully reconstruct and interpret his finds. However, some of this research was presented in a talk given a few years later (1986).

Over 15 excavation units exposing an area of approximately 170 m², Dwyer reported recovering extensive deposits containing Marcavalle and Chanapata style material culture, in addition to sizeable deposits of Early Intermediate Period (Qotakalli style) pottery overlying these deposits. Smaller amounts of Middle Horizon and Late Intermediate Period pottery also overlaid these deposits in some units, closer to the surface. These results will be discussed in fuller detail in Chapter 5.

Dwyer’s excavations at Minaspata were the most extensive research done directly on the site before my own research in from August to December 2013. However, Peruvian archaeologists Alfredo Valencia Zegarra in 1996 and José Gonzales Corrales in 2002 conducted small scale excavations (16-20 m² each and to depths of 1-2 meters) at various places at Minaspata as part of field schools designed to train local students studying archaeology at the San Antonio Abad National University of Cusco (UNSAAC). Neither excavation was published.¹⁰⁰

¹⁰⁰ A field report from the second set of excavations is available through the Cusco Ministry of Culture archives (Gonzales Corrales 2002) but contains little information.
Beginning in August 2014, the Cusco Ministry of Culture commenced a large scale research program in the Lucre Basin with excavations at Minaspata at the center of the project (Tovar Cayo et al. 2014). The long-term research objective was to better understand the culture history and the nature of the human occupation in the Cusco region, and Minaspata was selected partly as a multi-component site with a long history of occupation. Summaries of some of the results of this project have recently been published, briefly discussing a set of Inca structures and offerings (Antezana Condori et
al. 2015), the archaeobotanical remains recovered from different contexts (Suelli Montañez et al. 2015), funerary remains from Formative and Early Intermediate Period contexts (Quispe-Bustamante 2015), survey results of the Lucre Basin (Cabrera Carrillo 2015), the development of Early Intermediate Period ceramics at Minaspata (Gonzales Avendaño et al. 2015), and the production of lithic points (Condori Castillo 2015). In addition, a detailed report of the results of excavation and artifact analysis from this project is available at the Ministry of Culture in Cusco (Quispe Serrano et al. 2016). The results of this project will not be fully summarized in this dissertation, but will be briefly discussed where relevant to the results from the 2013 Minaspata Archaeological Project in Chapter 5.

**Conclusion**

In this chapter, I have summarized and discussed the current archaeological and historic literature regarding the development of the Cusco region and the Inca state; the Lucre Basin; and Minaspata. These data help establish a context for understanding new data recovered as part of the Minaspata Archaeological Project, which will be presented and discussed in Chapters 5, 6, and 7. The next chapter details the site selection process and methodology utilized in the execution of this research.
CHAPTER 4

METHODOLOGY OF THE MINASPATA ARCHAEOLOGICAL PROJECT

Site Selection

Since the primary research objective of this project is to investigate the long-term development of the Inca Empire and the cultural, social and political factors that led to this particular state organization and imperial practices, several criteria were important in selecting a site. Minaspata was chosen for excavation as the best candidate for satisfying these criteria.

As understanding the impact of Wari colonization of the Cuzco region on the development of the Inca state is highly relevant to this broader research agenda, selecting a site which was clearly located within the direct Wari sphere of influence was of prime importance. Settlement survey, among other data (such as ceramics analysis) in the past few decades has suggested that the Wari state focused on transforming a few select areas where colonies were located, with relatively little direct impact on the region as a whole during the Middle Horizon (Chapter 3). As a result, areas containing suitable archaeological sites were limited to a few areas – in particular, the Lucre Basin and Huaro Valley, where large Wari sites had been previously located.

Identifying a multicomponent site, with a long history of continuous occupation from before the Middle Horizon through the end of the Late Horizon, was also important. While comparison between different sites in the Cuzco region is important, and could in some ways make up for a lack of data resulting from missing occupation phases at any
given site, a continuous occupation sequence at a single site is crucial for identifying social and cultural continuities and disjunctions between different time periods. Perhaps more importantly, a long continuous occupation also allows archaeologists to better identify the manner and direction which large-scale political events may have impacted the social and cultural development of the site, and vice versa. As most of the larger sites in the Huarco Valley appear to consist of single occupation phases primarily during the Middle Horizon, sites to the Lucre Basin were the most suitable.

Finally, larger sites which likely served as primary towns are more likely to have played an important regional role in the politics of the Late Intermediate Period and the consolidation of the Inca state. These criteria left only two ideal sites: Choquepukio, and Minaspata. However, the former site has been subject to intensive research by a team of archaeologists since the late 1990s (Andrushko et al. 2009, 2011; Gibaja Oviedo 2016; Gibaja Oviedo et al. 2014; McEwan et al. 1995, 2002, 2005) and publication is continuing. As a result, Minaspata was the best remaining choice. The site is located less than a kilometer from Pikillacta, it would have probably been subject to intensive interaction with Wari colonists and state authorities. Preliminary surface survey conducted by myself identified diagnostic ceramics from all time periods, supporting previous research at Minaspata (Dwyer 1971, 1986) which indicated continuous occupation from the Formative Period through the end of the Late Horizon. Finally, not only is the site one of the largest settlements in the Cuzco region at roughly 35 ha in total.

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101 Batan Urco (Glowacki 2002; Zapata 1997) and Cotocotuyuc (Glowacki 2002b) may be exceptions, but Batan Urco appears to have been converted to an elite cemetery during the Middle Horizon and abandoned afterwards, while Cotocotuyuc was first occupied in the latter part of the Middle Horizon and occupation appears to only continue partway into the Late Intermediate Period.
area, it appears to have been crucial in cementing Inca sovereignty in the Lucre Basin, as numerous Inca constructions appear at various parts of the site. As described in Chapter 3, Minaspata was chosen by Huascar as the location for one of his royal estates, suggesting the site held special political and historical importance to the Inca. Altogether, the site of Minaspata promised to provide considerable insight into my research questions.

**Methodology**

The Minaspata Archaeological Project (PIAM, *Proyecto de Investigaciones Arqueológica Minaspata*) was a multi-part research project involving mapping, excavation, and targeted survey throughout the lower Lucre Basin. Systematic settlement survey had been conducted in the Lucre Basin on two previous occasions (McEwan 1984; Bauer et al. 2019), and these results have been considered in my analyses. PIAM was originally conceived of as a 10-month project directed by myself and José Víctor Gonzales Avendaño, involving mapping of the topography and surface architecture of Minaspata in June 2013; excavation from July to October 2013; and artifact analysis and other laboratory work from November 2013 to March 2014.

However, we ran into several obstacles throughout the course of fieldwork. Our excavation permit was delayed by several months in the Lima office of the Peruvian Ministry of Culture for bureaucratic reasons until late August 2013, during which time we could do little more than topographic mapping and clearing vegetation from the surface of Minaspata. The delay compressed our field season, giving us a few weeks
fewer than anticipated for excavation. It also overextended the project budget and resulted in staffing problems, as several volunteer students from the United States and Canada had to return to their universities in August.

I had originally planned to excavate upwards of 200 m² of horizontal excavations following test unit sampling, but two additional factors complicated this plan. First, the stratigraphy was much more complex than I had anticipated, which slowed the rate of excavation considerably. Second, our horizontal expansions were halted midway through excavation for bureaucratic reasons beyond our control. As a result of these factors, the total area excavated was just over 60 m². On the other hand, we were able to obtain a much more comprehensive vertical profile in one of the excavation units than originally planned. While my ability to interpret the function and use of larger occupied surfaces and structures is thus limited, a much deeper understanding of the trajectory of the material culture at Minaspata can be obtained as a result.

The permit delays meant that excavation was carried out by myself, my co-director, several workers and over a dozen Peruvian and one US student from late August to early December 2013, followed by laboratory work and artifact analysis from January to March 2014, July to September 2014, and June to September 2015. Targeted survey, including measurements and photographs of various structures, was done by myself (occasionally accompanied by one or two students) prior to the project in August 2012, and during the final laboratory season in August 2015.

Although we were unable to create a comprehensive map of the surface architecture of Minaspata due to limited time and budgetary restrictions, and because
many of the structures were either subsurface or destroyed during the Late Horizon through Inca landscape remodeling, several sources were used to provide a better understanding of the different parts of the site. This included extensive surface survey and exploration during topographic mapping, in 2012 and 2013; high-resolution IKONOS-2 (0.82 meter panchromatic and 3.2 m multispectral ground resolution) satellite imagery purchased from the GeoEye Foundation (now merged with the DigitalGlobe Foundation); aerial photographs taken in 1956 by the National Aerial Photographic Service of Peru (Servicio Aereofotográfico Nacional del Peru) obtained from Cuzco Ministry of Culture; aerial photographs taken in 1931 by the Shippee-Johnson Expedition to Peru (Denevan 1993) that are currently curated by the American Museum of Natural History Archives and Special Collections; and drone photographs of the surface of Minaspata taken by the Cuzco Ministry of Culture in 2015. These data will be presented when relevant throughout this dissertation.

Excavation Methodology

The 2013 field season at Minaspata began with the development of a site grid, dividing Minaspata into 10x10 meter sections, and the establishment of several datums across the site for total station mapping and backsighting. Because the location of the different occupation phases across the site of Minaspata were poorly understood, excavation commenced with the placement of four 2x2 m test units and one 4x1 m trench.

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102 Dwyer also excavated several test units as part of his dissertation (1971), but only reported on one of these units in detail as the only unit from which he recovered Killke style pottery (the subject of his dissertation). Excavation was more extensive during his later project (1986), but mainly focused on one small area of the site.
throughout the Western Sector of Minaspata (UE I, II, III, IV and V). I planned to expand horizontal excavation units adjacent to two or three test units which showed the most promise for informing the project research objectives. These extension units consisted of contiguous 2x2 meter units placed around the original test unit. Extension units were opened up around Unit IV (IV-A, IV-B, and IV-C) and Unit II (II-A, II-B, II-C, II-E, II-G, and II-J), and a sixth test unit (III-B) was placed approximately five meters from Unit III to clarify the results from the latter test unit (Chapter 5). Although this resulted in some discontinuity between the original test units and the expansion units since they were excavated at different times, concurrent features and levels were matched up using depths, photographs and drawings from all units and strata. All features and architecture identified during excavation were digitized using ArcGIS, permitting the features from the entire continuous set of units to be recreated at any given phase in the stratigraphy.

Excavation proceeded by 10 cm arbitrary levels until a different natural stratum was encountered, in which case a new level was created and excavated. Events in the archaeological record, including features, architecture, and funerary contexts, were excavated as separate contexts within these levels. All contexts were given two identifying designations. The first was a designation within each class of context: arbitrary and stratigraphic levels were ordered within each unit (N-A, N-B, and so on), while archaeological features (R-01, R-02, etc.), architectural units (A-01, A-02, etc.), and funerary contexts (CF-01, CF-02, etc.) were given numbers unique across the site. The second designation was a unique context number, which served to distinguish between any individual archaeological context, regardless of type, and which never
repeated. For example, Level N-C (Context 201) in Unit II may have contained a wall foundation designated A-01 (C202), a hearth designated R-01 (C203), and a small pit burial with human remains designated CF-01 (C204). In Unit IV, N-C (C205) may have contained a different wall foundation called A-02 (C206) and an ash lens called R-02 (C207). All artifacts and samples collected were linked to their original provenience by context number; the use of this unique context number ensured that artifacts from different proveniences were not accidentally misidentified or combined in the laboratory due to label confusion, while the class designations (e.g., R-01) simultaneously made comparison of different respective features, architecture, and funerary contexts across the site possible.

In general, new contexts were created whenever anything in the archaeological record could be distinguished in some way from the surrounding matrix, under the assumption that each different context represented a unique “action” or “event” created by human behavior. Specific information about each context was recorded on individual forms, unique to each type, about the nature, form, location, and content of each context, as well as its stratigraphic or spatial relationship to other contexts. Soil characterizations of each context were also made in the field, and consisted of soil texture, inclusion type, and soil color (determined using a Munsell Soil Color Chart). Photographs were taken of each context before and after excavation, as well as any special finds, which were photographed in situ.

Periodically, plan drawings were made and photographs taken of the entire unit (or contiguous units). While we relied primarily on representative plan drawings for the
initial test units using plumbobs and tape, a slightly different methodology was used for the larger extension units. Small bottle caps were placed throughout each unit, and with these caps in place, several plan photographs of sections of the unit were taken utilizing a camera atop an extendable pole to ensure a sufficient height. After photographs, the precise location of each bottle cap was measured using a Topcon EDM Total Station, and a sketch was made showing the location and shape of the different features in the plan photograph, as well as the approximate location of each bottle cap. In the laboratory, these photographs were then accurately stitched together into a larger file using Agisoft PhotoScan Professional 3-D modeling software; the resulting plan view image of the unit was then georeferenced in ArcGIS, using the total station coordinates of the bottle caps, which were still visible in the processed photograph. The architecture, features, and other contexts identified in the photograph could then be traced in ArcGIS and converted into digital vector drawings, which could be manipulated in various ways (such as pairing with contemporary contexts in adjacent units that may have been excavated at different rates, and thus might not have appeared together in the same drawing or photograph). While requiring slightly more post-processing time, this procedure not only resulted in greater spatial accuracy and analytical flexibility, but also saved considerable time in the field and excavation could continue unimpeded.

Collection Strategy

A variety of different types of materials were collected during excavation, including several different kinds of artifacts and samples. Artifacts were collected
directly from the context under excavation, or during screening; all contexts were subject to 100% screening using a 5 mm (0.2 inch) mesh screen, from which artifacts, carbon samples and other materials were recovered.

All artifacts were collected and bagged separately according to context and material/type. These types include:

- **Ceramics**: any object made of fired clay, including complete ceramic vessels, fragments of vessels, figurines or fragments of figurines, spindle whorls, etc. These different sub-groups were usually separated out in the laboratory.
- **Faunal remains**: any non-human bones.
- **Lithics**: This included three artifact classes that were treated differently.
  - **Lithics (general)**: these generally consisted of human-made expedient or shaped tools made from andesite or fine-grained basalt; groundstone artifacts, hammerstones, and polishing stones made from river cobbles or macrocrystalline stones such as sandstone and granite; as well as fragments and tools made from slate.\(^{103}\) All of these materials are available locally, within a short distance of Minaspata. Generally, only those with an identifiable morphological form, or those which showed evidence of human use or modification, were kept.

\(^{103}\) Because differentiating between expedient tools and simple rock fragments can be difficult in the field before the stone has been cleaned, I instructed students and workers to collect all stones made of dark blue or gray (i.e., andesite and basalt), as well as slate; ideally, modified or expedient tools were sorted from rocks in the laboratory. However, the workers and students took a while to become accustomed to this practice, and many stones of this type (probably including some expedient tools) were found in the excavated fill during the first few weeks of the excavations. As a result, I cannot claim to have a representative sample of all lithics from all contexts.
- **Special stone:** This category includes objects made from stone which was rare, brightly colored, or otherwise distinguishable or noteworthy. Tools and unformed fragments of this type were collected. Examples of stone types in this category include: various cryptocrystalline, silica-rich stones, such as chalcedony, jasper, and other forms of chert; quartzite and quartz crystals; calcite; and other stones of this nature.

- **Obsidian:** All examples of obsidian— including tool types such as blades and points, and small debitage fragments— were collected and kept separate as their own artifact class.

- **Human remains:** Human bones found as part of a primary or secondary burial were designated a Funerary Context and excavated collectively. However, a number of human bones (frequently small bones, such as hand and foot bones, teeth, or vertebrae) were recovered from non-burial contexts, isolated from any other human bones. These were usually identified in the laboratory and bagged separately.

- **Metal objects:** Any example of processed metal found in excavation was carefully collected, placed in an envelope of aluminum foil, and bagged separately. This included identifiable metal objects and those whose form was obscured by corrosion or breakage. (Metal ores, such as malachite and hematite, were classified as minerals rather than metals.)

- **Shell:** Marine and land snail shells were both collected under this category and separated in the laboratory. Shell from the red spiny oyster (*Spondylus princeps*),
which had important ritual connotations in the pre-Columbian Andes, was ostensibly given its own designation; however, no examples of *Spondylus* shell were recovered during the 2013 excavations.

- Other objects: these include small beads of varying materials, minerals (including mica, gypsum, hematite, malachite and other metal ores, ochre, etc.), fragments of white plaster, and fragments of wall covering made with clay-rich mud and *ichu* grass known as *revoque*. No textiles or cloth/wool materials were recovered in 2013.

Special objects which appeared to bear a particular spatial relationship to a context or intentionally placed were photographed and sketched *in situ* and their exact provenience was recorded with a total station. Apart from burials, however this only included a few objects.

In addition, several types of samples were collected. Radiocarbon samples larger than small flecks were taken indiscriminately from all contexts; excavators were instructed not to touch the samples with bare hands, and the samples were placed individually in envelopes made of aluminum foil and recorded by a unique sample number and the context number from which it was collected. Soil samples of 10 liters (when possible – if a context contained less than 10 liters, as much of the context’s soil as possible was taken) of every unique context from extension units\(^{104}\) were taken and recorded with sample number and context number. Botanical samples, consisting of identifiable plant remains (the majority of which were burned or carbonized, but

\(^{104}\) Systematic soil samples were not taken from the original test units.
preserved their form) such as seeds, roots, and rarely, leaves. These were collected in the same manner as the radiocarbon samples.

**Laboratory Procedure**

All artifacts collected in the field were taken to the laboratory, washed, and sorted (with the exception of metal objects and human bones, which were dry cleaned with a soft brush). Artifacts were sorted into three categories, or registries:

- **AE (Artefacto Especial) Registry:** special or diagnostic objects worthy of further study or recording.
- **GE (General) Registry (Diagnostic):** objects which were diagnostic as to style or form but were otherwise generally not useful for further analysis.
- **GE (General) Registry (Non-Diagnostic):** artifacts which were not diagnostic in any way and were not useful for further analysis.

All AE artifacts were weighed and given an individual AE number, regardless of material class; GE objects were weighed by bag/context and given a unique GE number by bag. This information was then recorded in the project inventory, along with information on the provenience the artifact or bag.

Soil samples were screened for large rocks and artifacts, measured again after screening, and then floated using a flotation tank constructed from a standard 200-L plastic drum obtained secondhand. The drum was washed repeatedly with bleach and rinsed with tap water; a small rectangle was cut out of the rim, and sheet metal was placed into the rectangular opening, bolted onto the drum, and sealed with caulk to form
an overflow spout. A small wooden stool-like structure was placed inside the drum to serve as a grid. Two overlapping 2-mm mesh screens were placed inside the drum and rested on the grid, and the soil sample was placed atop this mesh. A hose, linked to a clean water source, was placed below the mesh: the upwelling flow of the water from the hose gently agitated the light fraction of the sample to the surface, while the heavy fraction was caught by the mesh, allowing the sediment to sink through the mesh to the bottom of the flotation tank. The excess water, along with the light fraction on the surface, escaped via the spout along the rim of the tank and was caught in a fine mesh bag. After a sample was fully floated, the heavy fraction was allowed to dry indoors on newspaper, while the light fraction was hung on a clothesline in the mesh bag and dried away from direct sunlight for 2-3 days, before it was placed in a plastic bag to preserve and protect the sample for analysis.

**Laboratory Analysis**

All data recorded in the field regarding the excavation of levels, features, architecture, funerary contexts, and other notes were transcribed into a Microsoft Access relational database; records were entered into separate tables but unified by context number. This included all excavation photographs and scans of excavation drawings and sketches, which were also linked to their respective archaeological features by context number. The database also contained the artifact inventory, which served as the foundation for additional analysis and data entry on the different artifact classes. The advantage of a relational database is that the data from different tables can easily be
filtered, manipulated, and compared to similar classes of data from related tables, revealing patterns and associations that might otherwise be missed. It also aids in standardizing data entry and avoiding errors through the use of forms and pre-set entries. When errors are made, they can generally be identified by comparing data across different tables.

Many AE objects were individually photographed, including all of the metal, lithic, shell, and mineral AE materials, and the majority of decorated ceramic fragments, although we did not have time to photograph everything. All AE artifacts were examined and described on a basic level, although more systematic analysis was conducted primarily on ceramics and faunal remains, and specialized analyses were performed on the lithic artifacts, the obsidian and metal objects, and the flotation samples. Human remains were cleaned with a dry brush, identified, and inventoried, but were not thoroughly analyzed. (See below and Appendix B for descriptions of radiocarbon date analysis.)

Ceramics. The main objectives of the ceramic analysis, other than providing basic chronological control over the different strata and contexts excavated at Minaspata, were to identify individual traits or features that continued through time and across different pottery styles, as well as those which varied or differed between asynchronous styles, contemporary styles, and between different vessels within the same style. This includes both stylistic and decorative traits, as well as those more related to technological or production choices. Continuity in some attributes, particularly those related to technological choice, may indicate some long-term stability in social practice or
organization of production, even as aesthetic preferences and cultural ideas change in response to social and political shifts. Identifying the precise nature of the changes in ceramic practices can also help identify how regional sociopolitical dynamics affected communities on the local level. A secondary objective is to detect chronologically significant changes within ceramic styles, which will both aid researchers in the Cuzco region with chronological and archaeological interpretation, and shed light on the stylistic evolution of Cuzco ceramics through time.

In order to realize these objectives, PIAM team members recorded the style, chronology, and a brief description of all AE ceramic sherds, and conducted an intensive, multi-attribute analysis on several thousand individual AE sherds. Most analyzed sherds were photographed individually during the 2014 and 2015 laboratory seasons, and representative rim and base sherds were also drawn. Attributes were analyzed and recorded independently, including (when available) information on:

- For all fragments: vessel part; vessel form; average thickness of sherd; profile oxidation pattern; interior and exterior surface treatment; presence of fire clouding; paste hardness, texture, and color; interior and exterior surface color if applicable, or interior and exterior slip color; evidence of reuse of the sherd (as scraper, spindle whorl, or other tool/object); evidence of residue or primary use; style and approximate time period; any further notes or observations.

- For decorated fragments: each identifiable motif or design on any decorated sherd was recorded. Attributes recorded for each decoration included: location of motif (interior or exterior); technique (paint, incising, etc.); the motif, made with
reference to standardized nomenclature kept track of by the project as new designs were recorded; the color and orientation of the motif, as well as depth or thickness of motif, if applicable; and a description of the motif and how it varies from the archetype. For decorations on rims, the location of the motif on the rim and portion of rim covered were also recorded.

- For rims fragments: rim diameter; lip treatment; rim type (the categories are direct, simple, elaborated, or multiple articulated). Additional characteristics were also recorded, depending on rim type.

- For base fragments: exterior base shape; base-vessel wall articulation; any elaborations or additions and their characteristics/measurements; base thickness, diameter, and height if applicable.

- For handles: contour of the handle; handle shape in profile; orientation on the vessel; locations of handle/vessel joins on vessel body; handle thickness, width and length.

In addition to an analysis of visible exterior features, a representative random sample\textsuperscript{105} of ceramic fragments were selected for high-magnification photography of the sherd profile with a digital microscope, to characterize the paste more accurately. A total of 498 individual sherds were photographed in this manner; between one and five photographs were taken of each sherd, depending on the degree of heterogeneity in the distribution and size of non-plastic inclusions and voids observed in the profile.

\textsuperscript{105} Sherds were selected for profile photography randomly, but were taken according to stylistic grouping (to ensure that all styles from the EIP to the LH were represented) and only from the subset of fully analyzed ceramics.
The project methodology originally attempted to sort all fragments into paste groups based on a visual inspection of the profile with a 10x hands lens, which had been prepared by breaking off a small corner or section of the sherd with a pair of pliers, exposing a section of the profile unobscured by soil or erosion. However, identifying the differences and similarities in paste characteristics with any consistency proved difficult, except on a gross level or with respect to homogenous paste groups. To resolve this, the project team began taking photographing with a Dino-Lite Edge AM4115ZT digital microscope which provided high quality photographs. These images were generally taken at 75x zoom and 1280x1024 pixel resolution.

We began taking magnified photographs of the sherd profiles with the camera, with the idea of forming paste groups using the high-magnification photographs, which could be reviewed and sorted on the computer with better resolution than could be obtained using a hand lens. Because preparing the profile, photographing the paste, and identifying a paste group for all of the analyzed sherds would be far too time consuming, I intended to photograph a sufficient sample to obtain an idea of the different paste groups and their general distribution. These paste groups, examined independently of other attributes, could serve as a rough proxy measurement for ceramic production recipes, which may or may not correlate to style, form, or other characteristics. Because I could personally examine all photographs, groupings would also be less susceptible to individual impressions of different researchers, as well as unconscious bias created by the easily observed surface decorations and style of each sherd.
Originally, all photographs were taken of a section of the profile that had been exposed with a fresh break, as described above; over time, however, project members developed a protocol for improving the image quality by sanding a single side of the sherd to reveal a flat and clear profile for photographing. The profile was sanded successively by different grit sandpaper: first, by a low-grit (rough) sandpaper to flatten the profile; second, with medium-grit paper to smooth it; and finally, by high-grit sandpaper to polish the profile and remove abrasion marks left by the previous sandpaper. The entire process of polishing a sherd profile took about 15 minutes; as such, we were unable to perform this process on all sherds subject to profile photography for time reasons. While the process of sanding and polishing a sherd profile did result in higher quality images (and, as a result, more reliable analysis and identification), photographs taken using both procedures were quite usable.

The photographs were placed into paste groups based on a visual inspection of individual photographs. Since various factors (such as firing conditions) can affect the color of the paste and inclusions, the primary criteria for different paste groups included factors such as the size, shape, type, and distribution of the inclusions; the texture of the clay matrix; and the size, shape and distribution of voids. The color of the inclusions and the oxidized paste color were used to create sub-groupings when deemed appropriate.

Although this methodology is far superior to a simple visual inspection with a hand lens, several complications remain. First, the possibility that the area of the profile photographed is not representative of the paste as a whole is a concern; although steps were taken to mitigate this possibility, such as inspecting the heterogeneity of the
prepared profile before photographing (and taking multiple photographs at different points if necessary), the fact remains that generally only one side or section of the side of the sherd was prepared for photographing. Second, the color – and particularly the degree of oxidation of the paste during firing – may affect interpretation; for example, reduced sections of the paste which appear gray or black under the digital microscope might hide or obscure dark colored inclusions.

Third, and perhaps most important, is that the identification of the same minerals, rocks, and lithoclasts across different samples using only a visual inspection of the shape, texture, and color of the inclusions may be misleading. Although examples of the same type of inclusion do appear broadly similar across different sherds, petrographic analysis is the only reliable way to identify different inclusions, as many unique rocks and minerals appear visually similar or identical under reflective light. In addition, some rocks can appear differently shaded, depending on a variety of geological factors. The firing process has been known to affect the visual appearance of some common minerals, such as calcite. A petrographic analysis of a sufficient number of samples requires an investment in time and funding that is beyond the scope of this project.

However, several factors included in the methodology described above mitigate this problem somewhat. First, no attempt to actually identify the different inclusions by name was made, except when independently identified by other researchers. Instead, inclusions were classed as “similar” based on size, shape, angularity and color. Second, the inclusion component of the paste groupings was made based on the assemblage of
inclusions, rather than based on a single type.\textsuperscript{106} No paste group was based on a single factor (including dominant inclusion type). Despite these precautions, the misidentification of some inclusions is still a real possibility, and the results should be considered tentative in lieu of petrographic analysis. However, considerable insight can still be gained from a consideration of the paste types in conjunction with other macroscopic attributes of the ceramics.

The results of the ceramic analysis will be discussed in Chapter 6. However, only some of the data taken using the methods described above will be presented in this dissertation.

\textit{Faunal Remains.} Faunal remains recovered from archaeological contexts can provide information about the social, cultural and economic use of animals and the diet of past populations, how these things change through time and how they differ between social groups within a given population. To address these important research questions, I examined the individual AE specimens recovered during the excavations with the assistance of three students trained in zooarchaeological analysis. A basic identification of the body segment, element, and animal to which each bone belonged was recorded as part of the inventory process for all faunal remains, which came to a total of over 4000 individual specimens. Additional information was recorded, as part of a full analysis, for 59.8\% of these specimens, mainly drawn from EIP, LIP, and Late Horizon contexts. This additional data includes:

\footnote{\textsuperscript{106} In a few cases, the paste was dominated by a single type of inclusion, such as the andesite-tempered fabric which was highly prevalent in Inca-style ceramics. However, these tended to be highly standardized in other ways, making group identifications fairly reliable.}
Portion of the bone represented; body side of specimen (if non-axial); fusion state and age estimation of the specimen; identification of animal from which the specimen came, to the highest degree of precision possible; presence of percussion points or intentional fractures; number and location of cut marks; presence and type of any pathologies; taphonomic state of the specimen; identification numbers of any photographs or sketches of the specimen; and any additional observations.

Measurements were taken to the nearest millimeter on a select variety of metric standards described by Izeta and colleagues (2012) on any bone where these measurements could be taken, depending on the completeness of the specimen.

Additional detailed information on any teeth was also recorded, particularly related to state of tooth eruption and tooth wear, since this data can be used to provide highly detailed age profiles. This is especially true of adult animals, whose bones are usually fully fused.

Information on the tool form, use-wear, and location of the use-wear was also recorded if any intentional modification of the bone or evidence of its use as an ad hoc tool was identified.

Lithics. Because of collection and sampling problems with artifacts classified as “lithics” – in particular, issues with identifying expedient tools which were not heavily modified – the goals for the analysis of lithics and special stone artifacts were more limited. Essentially, the analysis attempted to trace the relative prevalence through time of ground stone vs. chipped stone tools (and the importance of these tools in food
preparation and other practices); expedient tools vs. more heavily modified and formed chipped stone tools; the presence and use of “exotic” or non-local stone, such as chert; and any other observations that can be made with limited data, including simply characterizing the use of local andesite and similar stones as expedient tools in the past.

In reality, this is enough to provide a basic contribution to archaeological knowledge: the manufacture and use of non-obsidian lithics in the Cuzco region has been poorly studied, particularly after the Formative Period (Chávez 1977). Furthermore, while an in-depth lithic analysis focusing on production techniques through time may have been useful to the broader research objectives of this project, conducting such an analysis would have been time-consuming and would provide little contribution (due to the smaller and non-systematic sample) compared to some of the other data sets discussed above.

Data recorded on lithic and special stone tools include: the material of the artifact when identifiable (e.g., andesite, basalt, sandstone, slate, etc.); the tool type (e.g., hammerstones, bifacial blades, points, flake tools, etc.); measurements on length, width and depth; a description of the shape and form of the tool; any observed use-wear; and any other observations. Generally, only lithics consisting of shaped tools or those showing evidence of use-wear were analyzed as AE artifacts. Debitage, as well as river cobbles, proximal flakes and other lithics which could have potentially served as tools, but lacked evidence of use-wear, were collected and catalogued as GE artifacts but not analyzed. Detailed photographs of all AE lithics and special stones were also taken.

*Obsidian.* A total of 177 individual fragments of obsidian were recovered across various contexts at Minaspatá. Of these, 154 (87.0%) were analyzed in July 2014 using
the InnovX Alpha Portable X-Ray Fluorescence (pXRF) reader owned by the Field Museum of Chicago’s Elemental Analysis Facility under the custodianship of Patrick Ryan Williams. This analysis was done to assess chemical trace element patterns in each obsidian fragment, which was matched to the trace element patterns of known obsidian sources throughout the Andes to identify the source of each fragment (Rademaker et al. 2013; Kellett et al. 2013; Glascock et al. 2007; Burger et al. 2006). The statistical analysis which matched each fragment to its respective source was done by David Reid, a graduate student at the University of Illinois at Chicago. The results of the obsidian sourcing analysis will be discussed in Chapter 7.

*Metal.* Twelve of fifteen metal artifacts were recovered from various contexts at Minaspata and analyzed by the InnovX Alpha pXRF under the supervision of Williams to determine the composition of each object. Three objects were covered by too much corrosion or soil to obtain a reliable reading, but the metallic composition of the other nine objects was successfully identified.

*Flotation Samples.* The light fraction\(^\text{107}\) recovered from the soil samples through flotation was sent to the Arqueobios Centro de Investigaciones Arqueobiológicas y Paleoeológicas Andinas, a laboratory and research center located in Trujillo, Peru. Directed by Víctor Vásquez, Arqueobios provides a variety of services which focus on archaeobiological and paleoecological analyses of material from archaeological contexts.

\(^{107}\) Some of the heavy fraction portions of the samples was examined by eye to identify small artifacts or faunal remains that escaped the screen and flotation process (particularly fish bones, which may have been trapped by the sediment), but after reviewing several of the contexts, we determined that archaeologically relevant remains were absent or rare in the heavy fraction. Evidently the flotation process – as well as the pre-flotation screening – was sufficient and a full review of all heavy fraction portions was deemed unnecessary.
Vásquez and the staff at Arqueobios provided a taxonomic identification and quantification of the macrobotanical and faunal (primarily land-based mollusks) remains in each soil sample, as well as a photographic registry of each sample and information on the ecology of many of the taxa identified in their analysis.
CHAPTER 5

THE 2013 MINASPATA ARCHAEOLOGICAL PROJECT (PIAM)
EXCAVATION SUMMARY

The 2013 PIAM excavation strategy was designed with two sequential goals in mind. The first objective was to sample the different phases of occupation across Minaspata and specifically throughout the Western Sector, which showed the most evidence of multi-component occupation (through the distribution of ceramics and surface architecture). Five 2x2 meter test units were placed throughout this sector of the site to reveal clusters of occupation for different phases in across the site (Figure 5.1). The second objective was to obtain a more detailed understanding of the cultural and stratigraphic sequences present in different parts of the site, by expanding the excavation of key units (depending on the results of the test unit phase). As described earlier in this chapter, this was done by expanding Unit II and IV through the addition of a number of 2x2 meter subunits. I will refer to the entirety of the original test units and these “extension” units as Unit II-Ext and Unit IV-Ext. A sixth text unit, measuring 2x2 meters in size (Unit III-B), was also placed near the original Unit III to clarify the results from that test unit.

A description of the objective of each unit will be provided below, followed by a brief summary of the excavation results of that unit. A more detailed excavation report can be found in Appendix A (including detailed bioarchaeological descriptions of the recovered human remains). The subsequent section will discuss the key developments at Minaspata for each major occupation phase at Minaspata and the implications of the site.
history for the development of the larger Cusco region and the long-term assemblage of the Inca state.

Figure 5.1. Location of excavation units on Minaspata.
Unit I Summary

Located in the corner of a large opened terraced area surrounded by Inca constructions in the northwest area of Minaspata, Unit I was placed to understand the history of building phases and specifically to determine if Inca structures were built on previous foundations (Figure 5.2). The Inca complex consists of a large open space facing northwest, where Cuzco Valley expands into Lucre Basin. This open space (marked as “Area A” in Figure 5.2), about 95 meters wide and at least 75 meters long and about 7-10 meters below the surrounding area, appears relatively flat and superficially resembles a plaza; in reality, however, the area is slightly uneven (ranging ~3 meters in elevation over the space) with large bedrock outcroppings and piles of fieldstones covering much of the surface, suggesting collapsed building walls. This open space is about 7-10 meters below the surface of the surrounding area. A long ramp located on the southwestern side of the complex (roughly 70 meters long and 11.5 meters wide, with a stone revetment wall fashioned with Inca-style facing) ascends 8 meters in elevation towards the interior of Minaspata. Parallel rows of stones could be identified on the slopes leading down to the larger lower area, suggesting small stone-lined revetments (now collapsed) on all three sides.

The southeastern part of this complex consists of two parts on a flat terraced section raised above lower open space. The southern half of this terraced area (identified as “Area B” in Figure 5.2), which meets with the aforementioned ramp in the southernmost point of the complex, contains the remnants of several small collapsed Inca-style constructions made of uncut fieldstone. The northern half of the section, by
contrast, is an open plaza (about 37 meters long and 14 meters wide) flanked by several rectilinear Inca-style constructions on the northeastern and southeastern sides (identified as “Area C” in Figure 5.2). These structures collapsed, leaving large piles of unworked fieldstone, but the wall foundations are still visible amidst the rubble. While the southwest side of this plaza meets the aggregation of small structures adjoining the top of

Figure 5.2. Inca complex in this northwestern area of Minaspata, with the location of Unit I indicated.
the ramp, the northwestern side of this plaza was left open to overlook the lower area, along with the majority of the Lucre Basin facing the valley towards Cusco. Unit I was placed in the northeastern corner of this upper plaza to understand how the Inca planned their construction with regards to earlier structures, based on anecdotal evidence that the Inca consecrated important spaces with offerings in the corners of structures (McEwan, personal communication 2012).

Based on the initial survey and mapping of the existing structure foundations and plaza in this architectural complex, it seems to have been constructed after site modification by the Inca for public or semi-public ceremony. One locus of activity may have been in the smaller terraced plaza flanked by buildings on three sides, where Unit I was placed. The surface of this plaza was densely covered with broken ceramic fragments; a large portion of them were Inca style sherds, but a noticeable proportion of broken Spanish roof tiles was also present.

Unit I was excavated to an approximate depth of 1.8 meters, and excavation was halted when we encountered an irregular stone surface, probably just above bedrock, which appeared to be sterile. The lowest stratum, roughly 1-1.2 meters thick, contained diagnostic ceramics dating to the Formative Period but no other evidence of cultural features or architecture, and probably represents gradual fill accumulating over centuries of occupation. The lowest 30-40 cm above bedrock contained exclusively Marcavalle-style ceramics dating to the Middle Formative Phase (ca. 1500-500 CE), and a carbon

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108 A 10x10 meter unit was opened in this lower area (“Area A”) by the 2014-2015 Ministry of Culture project (PIA-Lucre), revealing extensive evidence of Inca religious ceremony. These results are discussed in more detail below, towards the end of this chapter.
sample taken from the lowest excavation level just above bedrock provided a calibrated date of 816-761 BCE (95.4% CI). This represents the earliest evidence of occupation at Minaspata recovered from the 2013 excavations.

Approximately 35 cm above bedrock, small numbers of Chanapata style ceramic fragments began to appear. This ceramic style is diagnostic to the Late Formative Phase (ca. 500 BCE-300 CE), although the precise date for when these first begin to appear is unclear. The mixture of Chanapata and Marcavalle style ceramics in this part of the stratum of Unit I suggests that these ceramic styles were used concurrently for a short time, and that these excavation levels probably represented a transitional period between the Middle and Late Formative Period phases around 700-500 BCE. The proportion of Chanapata style ceramic fragments increased over the next ~20 cm until Marcavalle sherds had phased out completely. A large quantity of obsidian debitage was also recovered from these contexts: 27 obsidian flakes were recovered from Late Formative Period levels, and 25 flakes were recovered from Middle Formative Period levels. All fragments were less than 1.5 cm in size and were traced to the Alca obsidian source (Chapter 8), located in the Cotahuasi Valley in central Arequipa approximately 195 km south of Cusco (Burger et al. 2000; see also Jennings and Glascock 2002).

About 80-90 cm above the bedrock, we uncovered an L-shaped wall foundation, running along the eastern profile wall and then turning to cut through the center of Unit I (Figure 5.3). Slightly below this architectural feature, a well-preserved burial had been placed (CF-02), face-up in a flexed position and embedded in the surrounding matrix but lacking any evidence of a funerary pit, structure, or offerings (Figure 5.4). An upright flat
stone was placed in the east side of the wall foundation aligned with the position of the buried individual, and may have served to mark the burial.\textsuperscript{1} The individual in CF-02 was well-preserved, with the bones still mostly articulated; bioarchaeological analysis revealed that the individual was a female over 40 years of age, likely between 40 and 45. Tabular cranial modification (pressure applied to the occipital bone when in infancy) was

\textsuperscript{1} No floor surface was identified associated with the wall foundation, but one may have existed; the matrix was very compact throughout, which would have made identifying a floor surface based on soil consistency alone difficult.
evident, and a number of pathologies were noted that indicated the individual was living with a disease at the time of death.

A marked stratigraphic change occurred just above the level of this architectural feature, and all evidence of Late Formative Period ceramics disappeared. This new stratum was only about 15-20 cm thick, but the top of this stratum was located at the same elevation as the surface of the smaller plaza area in which Unit I was located. This was likely the original surface level, but Unit I was placed adjacent to the Inca style buildings surrounding the plaza, and was covered by significant amounts of wall fall from one of these buildings, ranging between 20 and 65 in depth across Unit I. Material culture recovered from the wall fall and the initial excavation levels near the surface consisted of

Figure 5.4. Human funerary context (CF-02) from Unit I, placed in corner of A-22.
predominantly Inca style ceramic fragments, but over 600 Spanish roof tile fragments were also recovered. No evidence of Colonial era roof tile production was identified at Minaspata, and the presence of these tile fragments probably represents trash dumping.

This marked stratigraphic change between Late Formative Period and Inca Period strata, with no evidence of activity from intervening time periods, suggest that the Inca probably leveled and cleared this area of any sediment containing later material in order to create a larger complex consisting of multiple levels and flat, terraced spaces. The shallow depth of the intact stratum containing Inca style material culture suggest that this was very late, perhaps as part of the effort to construct Huascar’s royal estate at Minaspata after the majority of its inhabitants were forced to relocate (Chapter 3).

**Unit II-Ext Summary**

Unit II was a 2x2 meter test unit placed in an L-shaped room in a compound of rectilinear cells, each separated by large walls constructed of unworked fieldstone and small boulders (Figure 5.5). However, similar to most of the surviving surface architecture throughout Minaspata, the upper sections of these walls had collapsed and covered the original bases (Figure 5.6). The construction style, material, and configuration of the rooms in this compound do not conform to characteristic Inca state canons, and were probably constructed in the Late Intermediate Period or earlier.
Figure 5.5. Unit II-Ext and surrounding area, with surface architecture outlined in blue.
A test unit was originally placed here due to several characteristics of the surrounding area, which together suggested that substantial Middle Horizon remains may have been preserved in this section of the site. The shape of the rectilinear rooms, as well as the apparent size and thickness of the walls, superficially resembled some of the smaller enclosures still preserved at Pikillacta. Although relatively few diagnostic ceramics dating belonging to Middle Horizon styles were recovered during surface collections from these cells, Middle Horizon sherds still made up a higher proportion of the recovered surface collections than those from elsewhere on the site. Finally, the visible surface architecture in this compound seemed to have escaped significant modification during the Late Horizon and into the Colonial Period (which later was revealed to be untrue), suggesting that remains from earlier periods might be well preserved.
This test unit was excavated to an average depth of just over 2 meters below the surface level, at which point the excavation team uncovered a well-constructed wall foundation in strata associated with early EIP and Late Formative diagnostic material. Unit II was characterized by a number of overlapping architectural features and stone wall foundations, and a partial human burials was found associated with the lowest wall. Significant renovation and reuse through all periods was evident. Despite this, of all the test units excavated, Unit II showed the most complete vertical stratigraphic profile, containing an apparently continuous occupation from the end of the Late Formative Phase to the end of the Inca phase at Minaspata. While subsequent excavation suggested, in fact, that the evidence for occupation during the Middle Horizon was extremely limited at best (see below), Unit II revealed that this part of Minaspata was occupied during the Late Formative Phase, Early Intermediate Period, and Late Intermediate Period, and appears to have been subject to significant modification by the Inca.

Because of this nearly complete occupation history, I targeted the area around Unit II for expansion during the second phase of excavation. Six additional contiguous 2x2 meter sub-units were opened around Unit II and excavated concurrently to a similar depth as Unit II. These sub-units (II-A, II-B, II-C, II-E, II-J, and II-G, collectively referred to along with Unit II as “Unit II-Ext”) revealed a complex and dense occupation history which spanned at least 1000 years, with frequent renovation and reconfiguration of spaces. The densest occupation levels belonged to the Early Intermediate Period and

\[\text{2 Subunits II-A, II-B, and II-E were brought to the same level, while Subunits II-C, II-G, and II-J were stopped a slightly higher depth. We did not attempt to excavate to sterile soil due to time constraints, and due to the fact that we were primarily interested in EIP and later phases.}\]
the Late Intermediate Period, both of which revealed evidence of multiple sequential construction phases. Many of the later constructions during the LIP, however, appear to have been covered over by a small terrace constructed sometime during the Late Horizon; the adjacent space exposed by the excavation of UE II-Ext was transformed into an area for Inca craft production, potentially textile production, the finishing of ceramic vessels, and the working of laminated metal. Finally, three intrusive pits dug into the surface of the latest intact occupation levels contained mixed material culture diagnostic to earlier time periods, as well as a few metal objects dating to the early Colonial Period, indicating that Minaspata may have been subject to limited amounts of looting by early Spanish settlers in the Cusco region.

The lowest levels of Unit II-Ext contained a well-constructed stone wall foundation oriented NNE through Subunit II-A, II, and II-E (A-117) (Figure 5.7). The wall was 75 cm thick, faced on both sides with a rubble core, and slightly over 4 meters long, although the southern end appears to have been dismantled and it may have originally been longer. The surrounding sediment contained Late Formative Period Chanapata-style ceramics in small numbers, mixed with higher proportions of Early Intermediate Period ceramics, suggesting an approximate date at the very beginning of the EIP ca. 300 BCE. These EIP ceramics, including Qotakalli, Waru, and Local EIP styles, were often rudimentary and poorly fired with significant fire clouding, indicating a lack of control and expertise over new production technologies.
Shortly after this phase, the southern end of the wall was dismantled and the entire foundation was covered by about 15-20 cm of fill. Late Formative Period ceramics were absent from this sediment, suggesting they had phased out fairly rapidly. Located in this fill atop the wall foundation was a partial human burial (CF-01); although poorly preserved (roughly 35% of the bones in a normal human body were preserved), the position of the extant bones suggest that it was a primary burial of a male of indeterminate age, interred in a dorsal flexed position aligned with the orientation of the wall foundation (Figure 5.8). The human burial may have been associated in some way with the burial of this wall foundation – perhaps interred in the fill as part of the renovation of this area, or to commemorate the abandonment of an important structure. Three small stone alignments, all oriented parallel to the earlier wall foundation, were
also placed as part of this fill deposition (A-02, A-115, A-119). These stone alignments appear to be too small to have served as wall foundations, and although the purpose is unclear, they may have served as benches, steps, or possibly the lips of small earthen platforms of some sort. They are also at slightly different elevations, but given the small size of these architectural features, as well as the stratigraphic relationships and surrounding cultural material, these small alignments were likely placed within a relatively short window of time during the early/mid-EIP.

Figure 5.8. Funerary context (CF-01) atop A-117 foundation from Subunit II.
The third phase of EIP occupation is largely marked by a continued buildup of soil and cultural material dating to the Early Intermediate Period, primarily Qotakalli-style ceramics. Relatively fewer Waru-style and Local EIP-style ceramics occur in these levels, although they do continue to appear in small amounts. In addition, Qotakalli-style ceramics appear to be more frequently decorated and more highly standardized in production style and quality, with more consistent black-on-cream slip decoration and with fewer sherds showing evidence of fire-clouding and other firing inconsistencies. Relatively few noteworthy features (architectural or otherwise) appear in Unit II-Ext during this phase, and these occupation levels probably represent a relatively stable period of activity. A large ash lens recovered in Unit II, possibly representing a hearth, provided a radiocarbon sample indicating this phase of activity most likely took place during the 5th century CE.3

The terminal phase of the Early Intermediate Period, probably beginning in the early 6th century CE, is characterized by a flurry of construction and renovation activity (Figure 5.9). At least four wall foundations (A-04, A-105, A-120, and A-111) and one smaller architectural feature (A-118, resembling the stone alignments discussed in an earlier phase above) were constructed during this time, including a substantial but coarsely constructed foundation oriented roughly east-west and extending across the center of Unit II-Ext (A-04) (Figure 5.9). These four architectural features seem to have

3 The radiocarbon sample (MC 12; See Appendix B) returned a date of 1523±30 radiocarbon years BP, which was calibrated to 428-498 CE (33.0% CI) or 505-605 CE (62.4% CI) (IntCal13 Calibration, 95.4% CI). The later of these date ranges, although more probable from a statistical standpoint, is fairly late for the stratigraphic level in which it is found. The IntCal13 calibration curve is unfortunately quite flat from around 400-600 CE, but a consideration of the context and another radiocarbon date (MC 1126) taken from a higher excavation level about 40-50 cm above this context suggests the earlier range is more probable.
been constructed in rapid sequence, but perhaps in a piecemeal, *ad hoc* fashion – changing the space as needed rather than being constructed as part of a single plan.

Shortly following the construction of these architectural features, a smaller wall foundation oriented NNW was constructed to the south in Subunits II-J and II-E. This wall foundation was about 35 cm wide and at least 3.35 meters long, although it extends into the eastern profile wall of Subunit II-J, and is likely longer. A foundation trench associated with this wall foundation contained several fragments of typical Qotakalli-style pottery.

This rapid flurry of construction events, likely taking place within a 100 year period at the end of the Early Intermediate Period, seems to have culminated with a fairly large construction fill event which obliterated much of the EIP phase in the northeast section of the larger unit. This feature (R-112) consists of a large pit (about 2.4 meters east-west and at least 1.4 meters north-south) dug into lower stratigraphic levels and filled with a significant quantity of large stones (Figure 5.9; Figure 5.10). Two of the wall foundations discussed above appear to end in an irregular fashion at the edge of this pit, suggesting that they may have been partly cut or destroyed by this intrusive event. A radiocarbon sample taken from the highest excavation level containing EIP diagnostic ceramics (located in Subunit II-A, adjacent to Feature R-112) returned a calibrated date of 533-613 CE (95.4% CI), suggesting that the terminal phase of EIP occupation in this part of Minaspata anticipated the onset of the Middle Horizon and the arrival of the Wari colonists. The excavation level from which this sample was recovered slightly overlaps the western edge of Feature R-112, suggesting that it was deposited after. An additional
short wall foundation against the eastern profile wall of Subunit II-C was also constructed slightly after, as it covers part of the large stones making up the fill of R-112 (but is still associated with the late EIP stratum).

Figure 5.9. Architectural foundations and features in Unit II-Ext constructed during the Late Formative and Early EIP phases.
Figure 5.10. Architectural foundations and features in UE II-Ext constructed during the Late and Terminal EIP phases.
Despite the substantial EIP occupation revealed in this part of Minaspata by the excavation of Unit II-Ext, this area seems to have been abandoned around 600 CE. The only evidence of any activity during the Middle Horizon comes from a thin (~5 cm) stratum in Subunit II-A, north of architectural feature A-04 and in the area not taken up by Feature R-112 (Figure 5.11). The stratum was generally compact and may represent a partly preserved earthen floor or open surface directly overlaying the latest stratum dating to the EIP. Although little of note was recovered, two radiocarbon samples taken from this surface returned two dates from the Middle Horizon. However, the date ranges barely overlapped, suggesting this surface may have been exposed for some time and the carbon samples may have been deposited at different times. This thin surface represents the only evidence of activity during the Middle Horizon in Unit II-Ext, and indeed, from any of the units excavated at Minaspata from the 2013 excavations.

Interestingly, the pile of large stones making up the fill of R-112 extended above this surface towards the eastern half of Subunit II-B, and was only fully covered by later strata dating to the early Late Intermediate Period. If this feature has been interpreted correctly as a fill event, it is unlikely that the construction event this fill represented would have been left unfinished and only partly covered by the activity surfaces around it during the Middle Horizon. It may suggest that occupation in this part of Minaspata largely ceased around 600 CE and was mostly abandoned rather suddenly, in the middle of construction or renovation of this area. (See below for further discussion of these events.)

4 These samples are MC 886, calibrated to 666-726 CE (61.2% CI) or 738-769 CE (34.2% CI); and MC 887, calibrated to 726-738 CE (3.9% CI) or 767-886 CE (91.5% CI).
Immediately above this exposed Middle Horizon surface in the northern half of UE II-Ext, a series of architectural and non-architectural features appeared rapidly stretching across Subunits II, II-A, II-B, and II-C which date to the early LIP (A-106, A-107, A-108, A-109, A-110, and Feature R-114). These features are associated with early Lucre-style pottery, and several radiocarbon samples taken from some of these secure contexts place this activity to a narrow window in the first several decades of the 11th century CE. Stone wall foundations and other features overlap throughout these later

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5 Five radiocarbon samples were ultimately processed from early LIP contexts (MC 803, MC 687, MC840, MC 810, and MC 696; Appendix X). Four of these samples returned uncalibrated carbon dates within a few years of 995 ± 24 bp. Calibrated and processed as part of the same archaeological phase using Bayesian
strata, showing multiple sequential phases of construction and use throughout the entirety of the LIP. Some of these wall foundations seem to utilize or replicate earlier EIP structures and spaces, either integrating earlier walls (perhaps still exposed) or oriented with reference to them (Figure 5.12). These walls would have been covered by clay and plaster, and evidence of small-scale production of gypsum plaster was found in Subunit II-C in association with a newly constructed wall (Figure 5.13). While it is unclear to what extent plaster was used to cover wall constructions prior to the Middle Horizon at Minapata, this was a frequent practice at various Wari sites around the highlands, and several well-preserved rooms and floors covered in multiple layers of plaster at Pikillacta attest to its local use (McEwan 2005). The proliferation of construction activity at the beginning of the LIP suggests a rapid reoccupation immediately following (or even during) the collapse of Wari colonies and political structure in the Cusco region.

analysis, these samples provided highly consisted date ranges between 1005-1045 CE. The sole exception was MC 696, which provided an earlier date which is likely an outlier, given the stratigraphic association between the other contexts and the one from which MC 696 was recovered.
Figure 5.12. Compact earthen surface dating to the MH in Subunits II-A and II-B.

Bottom: stratigraphic profile drawing of Subunits II-A and II-B, with compact earthen surface indicated.
Figure 5.13. Architectural foundations and features in Unit II-Ext in use during the LIP.
In a second phase of construction during the later stages of the Late Intermediate Period, at least two more stone wall foundations were constructed, one in the western side of Subunit II-G (A-103) and a second in the southern side of II-J (A-114). This latter foundation, oriented roughly E-W, may have intersected with the earlier wall foundation in Subunits II-E and II-J which was constructed during the late EIP. The stratigraphy containing LIP diagnostic artifacts was more vertically compressed in this part of Unit II-Ext, suggesting that activity was less intense in this section. However, judging from the stratigraphic relationships between these two wall foundations and the features located in the northern part of the unit, it seems most likely that these latter wall foundations were constructed sometime between 1200 and 1400 CE.

The appearance of dense quantities of classic Inca style material culture in the upper strata of UE II-Ext at Minaspata is associated with extensive alterations and modifications to the built environment in this area (Figure 5.14). A 4-meter long revetment wall, ca. 60 cm in height, was constructed through Subunits II-E and II-J (A-101), oriented NNW and covering the earlier EIP wall foundation in this area (Figure 5.15). This revetment wall was faced only on its western side; to the east of this wall, a thick layer of stones and fill was deposited, covering most of the earlier LIP occupation in the north and east of Unit II-Ext. The effect was the construction of a low terrace across the eastern part of the larger unit, which covered all evidence of LIP occupation activity. This revetment wall appeared to intersect with earlier LIP stone wall foundations

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6 The architectural join between this earlier wall and the later one was just outside of the eastern profile wall of Unit II-J, meaning that it is impossible to determine conclusively whether these walls joined or only appeared to based on the stratigraphic relationship.
running E-W across Subunits II and II-C, likely integrating them into the formation of this low terrace.

Figure 5.14. Subunit II-C with Early LIP remains exposed, showing evidence of in situ plaster production.
Figure 5.15. Architectural foundations and features in Unit II-Ext constructed during the Late Horizon.
A large, stone-lined, semi-circular feature was likely deposited as part of this terrace construction activity in the northeastern part of the larger unit (Subunit II-B). This feature, R-101, was first identified 15-20 cm below the surface and consisted of a roughly circular or D-shaped constructed shallow “pit” or cavity, marked with large stones along the sides and bottom and subsequently covered with more stones (Figure 5.16). The feature was approximately 2x2 meters in size and about 40 cm deep. Between the upper and lower stone layers was an extremely high density of broken ceramic sherds (many from evidently large vessels), ash and carbon samples, fragments of reboque and burnt clay, and faunal remains. Feature R-101 seems to have been constructed, filled, burned, and covered as part of a single, intentional event. A radiocarbon date taken from Feature R-101 returned a calibrated date of 1414-1463 CE, towards the beginning of the Late Horizon and likely marking the early decades of Inca occupation at Minaspata.

The area west of the revetment wall (in Subunits II-G, II-E, and II-J) appears to have been reserved as a craftworking area for Inca objects during this phase. A floor surface lined with reddish compact clay was identified about 60 cm below the surface. An additional architectural feature was placed on the southern side of Subunit II-J, abutting the revetment wall and covering the earlier LIP wall foundation here (A-102). This architectural feature consisted of several rows of unworked stones, nearly a meter thick, forming a roughly rectangular base or structure extending into the western profile wall; it formed an approximate L-shape, with a short (65 cm) section on the west side of the

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7 MC 411. A second sample (MC 497) was also taken from this context, but returned an earlier date of 1281-1316 (46.6% CI) or 1355-1390 CE (48.8% CI). Given the stratigraphic association of this feature with other Inca constructions in Unit II-Ext, this date is probably too early to accurately date this event, and may be an example of the “old wood problem.”
II-J that ran N-S parallel to the revetment wall. This may have created a small alcove, and a small square hearth defined by small stones (R-102) was placed atop the reddish-clay floor on the northern side of this larger architectural feature abutting the revetment wall on the southern side of Subunit II-J (Figure 5.17).

Figure 5.16. Inca revetment wall in Unit II-E and II-J, covering EIP wall foundation A-111.
Copious quantities of Inca-style artifacts and faunal remains (especially camelid and large mammal, but including small numbers of *cavea porcellus* bones) were recovered from the fill atop the reddish-clay floor west of the revetment wall. These included large numbers of Classic Inca polychrome ceramic vessel fragments and a variety of objects and tools representing textile production and weaving, ceramic shaping and pre-firing finishing (scraping or burnishing/polishing), metal production, and shell processing/bead production (Figure 5.18). Two large boulders were also deposited on the floor, each with a smoothed, concave grinding surface on one side. This area was converted into a (probably outdoor) space, perhaps partly roofed in the southern section,
which was employed as a workspace for craft production of various types, and delimited on the west by a low terrace covering earlier LIP occupation remains.

Figure 5.18. Southern side of Subunit II-J, showing intersection of A-101, A-102, and hearth feature R-102.
At the level of, or just slightly above, the Inca Period reddish-clay floor surface, four similar features were identified that point to early Colonial Period activity in this part of Minaspata. Two large, deep, intrusive pits were placed in Subunits II-G (ca. 70 x 50 cm in size and 65 cm deep) and II-E (about 130 cm long and extending 80 cm from the western profile wall), which were filled with large stones, loose soil, root vegetation, and a random assortment of artifacts from different time periods mixed evenly throughout the pits (Figure 5.19). An additional, smaller pit was identified in the northern profile wall of Subunit II-G. While the precise timing and nature of these pit features is not easily discerned from the stratigraphy and artifacts deposited in the pits, an additional feature located at the same stratigraphic depth in Subunit II (suggesting contemporaneity) sheds light on these questions. This feature, a shallow ash lens about 70 cm long, 35 cm wide, and 15 cm deep contained a single square-cut iron nail mixed in with other pre-Columbian ceramic sherds (Figure 5.20).

This colonial-era object indicates that this ash lens - and probably the other pit features in this stratigraphic level - were a result of early Colonial activity, most likely intrusive pits dug just after the abandonment of the site and shortly following the arrival of the Spanish to the Cusco region in 1532-1533. They are best interpreted as non-systematic looting, perhaps perpetrated by conquistadores placing opportunistic pits into an exposed surface. These pits, and the Inca Period floor, were subsequently covered by natural fill containing dense quantities of Inca-style artifacts, as well as a few Colonial Period artifacts, including an iron projectile point, isolated pig teeth, and several Spanish colonial roof tiles near the surface.
Ceramic processing: (A) A hand held scraper used to smooth vessel surfaces. (B) A small triangular used to smooth vessel rims. Bottom side showed use-wear that fit many Inca ceramic vessel rims. Textile production: (C) Bone needle. (D) Bone awl. (E) Weaving tool (w’ichuna) made from camelid metatarsal. (F) Ceramic spindle whorl. (G) Spindle whorl made from large mammal femur head. Beads and jewelry production: (H) Unfinished calcite bead. (I) Marine shell bead. (J) Bone bead. (K) Cylindrical stone bead. (L) Red marine shell (possibly Spondylus princeps) polished smooth in preparation for bead production. Metal processing: (M) Flat stone with 1-2 cm rim possibly used for flattening metal sheets. (N) Hand-held stone with flattened surface from use. (O) Tin bronze metal fragment. (P) Copper-silver alloy sheet metal fragment.
Unit III Summary

Unit III was a 2x2 m excavation unit placed towards the southern extent of the Western Sector, in the center of a large, flat, rectangular open space measuring roughly 45 meters long and 20 meters wide. This open space was defined by short revetment walls to the east and north and by thick wall foundations on the south and west sides (Figure 5.21). These wall foundations were covered in fallen wall rubble of unworked stones, but the foundation was visible through the stones in some parts, and suggests a wall that was originally at least 2-3 meters thick (and likely several meters high) and rebuilt more than once. Although lacking most characteristics features of Inca style construction, the open area where Unit III was placed is located near a series of Inca buildings to the south, the closest of which is approximately 60 meters from Unit III. Two other rectangular open spaces, similar in form and construction, are located immediately to the west and are about 1-2 meters higher in elevation. All three of these
spaces are clearly constructed; while much of the modern-day topography on Minaspata is moderately sloped or rolling, these spaces are remarkably flat and were evidently leveled, varying by less than 50-60 cm over the entirety of the rectangular space. The large thick walls and short terraced revetment walls define these areas, which create the perception of large, flat, and discrete “plaza” spaces leveled at elevations differing by a few meters.\footnote{Whether these spaces were intended to represent open plazas or not is difficult to determine without further excavation, as the foundations of structures could be hidden below the surface.}

This test unit was placed in the center of this open space for two reasons. First, the rigid rectangular shape of this space stood out in comparison to the more irregular open spaces formed by collapsed wall rubble around the site. Second, since the surface of Minaspata lacked clear evidence for smaller buildings (in particular, domestic structures), I hypothesized that groups of domestic structures, or other types of buildings, may have been clustered in these more open spaces but that the stone foundations were buried under the surface and partly covered by the upper adobe portions of the walls, which would have long since fallen and disintegrated into sediment. Unit III represented an opportunity to test this idea, as well as to provide information on the nature and timing of the modification of this area of Minaspata, which showed clear evidence of extensive landscaping in the form of these large, flat, bounded spaces.
Figure 5.21. Location of Unit III and III-B, with adjacent open plazas, large wall foundations and revetment walls, and Inca buildings.
Unit III was excavated to an approximate depth of 1.6 meters below the surface, at which point we encountered soft, irregular bedrock. The lowest stratum, ca. 20-30 cm thick, contained predominantly Late Formative Period undecorated ceramic fragments. Relatively little else of note was found in this stratum, beyond a single disassociated human jaw, a small lens of white ash, and a carbonized (but otherwise preserved) leaf fragment which had a structure and shape closely resembling coca leaves\(^{109}\) (Chapter 7).

Above this stratum, on the other hand, was a complex set of cultural features which seems to date to the transition between the Formative Period and the Early Intermediate Period. Several large stones and boulders were found near the top of this stratum, although they do not appear to have been aligned in any clear fashion. Interspersed between these large stones were sections of hardened and apparently fired soil high in clay content, and large randomly distributed pockets of loose soil and ash, which varied in size from several centimeters in diameter to nearly half a meter long (Figure 5.22). A shallow but long trash deposit, containing dense quantities of faunal bone and broken stone, was also uncovered in this layer on the west side of Unit III (Figure 5.23). The diagnostic material culture consisted mostly of Qotakalli style and other ceramics dating to the EIP, although many of them appear to be quite early in decoration and production technology, and small numbers of Chanapata style ceramics dating to the Late Formative began to appear in the lower levels of this stratum. While interpreting these features with any confidence is difficult without additional excavation, the juxtaposition of large stones, ash lenses, and hardened clay may represent the remains

\(^{109}\) A second carbon leaf fragment was also recovered from an Early EIP context in Unit II-Ext. See Chapter 7 for images.
Figure 5.22. Stones mixed with patches of hardened clay and loose ashy gray sediment in Unit III.

Figure 5.23. Midden deposit located along west side of Unit III.
of a domestic structure destroyed by fire sometime just after the transition between the Late Formative and the Early Intermediate Periods (ca. 300-400 CE).

A stone-lined feature was uncovered at the bottom of this cultural stratum, about a meter below the surface, extending into the profile wall of the southeast corner. As this feature was only partially uncovered, we decided to place a small 1x1 m extension (Subunit III-A) over the corner of the unit after excavating to bedrock in the rest of Unit III. This feature, when fully uncovered, revealed itself to be a small stone-lined pit filled containing a primary human burial (CF-04) and covered with a flat capstone (Figure 5.24). The individual in this pit (which was about 60 cm in diameter and 50 cm deep) was placed in a seated flexed position, facing to the east, with hands and feet both crossed over each other at the bottom of the pit. Although articulated, the bones in this burial were extremely fragile and many began to crumble as soon as the loose sediment supporting the bones was removed. Despite this, analysis of the surviving bones indicated that the individual was a female less than 35 years of age at the time of death, with only minor pathologies represented by osteophytes on the lower vertebrae (representing the skeletal effects of heavy labor). No grave goods or burial offerings were included in the stone-lined pit; however, the stratigraphic position of the top of the burial, and the recovery of a few undecorated ceramic sherds dating to the Formative Period located around the edges and in the soil of the pit, provide a probable burial date near the Late Formative/EIP transition around 300 CE.

The upper 50-60 cm of Unit III consisted of homogeneous sediment containing diagnostic ceramics dating primarily to the Early Intermediate Period. Small numbers of
sherds belonging to Middle Horizon and Late Formative styles were also recovered in this sediment, as were a few Lucre-style sherds dating to the LIP and a single Inca-style sherd. No cultural features were located in this stratum, and the consistency and homogeneity of the soil, as well as the uniform distribution of EIP ceramic sherds, suggest that this stratum may have been deposited intentionally as fill in order to level out this area and create the rectangular open space visible today. However, an alternative interpretation is also possible (see below).

Figure 5.24. Funerary context in Subunit III-A.
1: CF-04 exposed with capstone in place. 2: Funerary structure partly exposed, with upright stones around the edge of the pit and covered with smaller stones. 3: Articulated skeletal remains partly exposed with cranium removed.
Unit III-B Summary

The uppermost stratum in Unit III suggested two potential interpretations for the nature and history of this area. First, the stratum may have represented a more recent fill event, meant to level this area for later use but created using sediment taken from primary or secondary contexts dating to the EIP. The second possibility is that it represented an occupation dating to the Early Intermediate Period which showed no evidence of architecture or cultural activity simply because Unit III was placed between activity areas. To test these hypotheses, a second 2x2 meter test unit, named Unit III-B, was established 10 meters to the southeast and adjacent to the thick stone wall foundation bordering this open space (Figure 5.21, above).

Unit III-B was excavated to bedrock located between 60 and 90 cm below the surface. No radiocarbon dates were processed, and the majority of the ceramics were undecorated domestic-ware fragments, some of which were diagnostic to the Late Formative Phase. However, judging from these diagnostic sherds and the stratigraphy, most of Unit III-B seems to be contemporaneous with the lower levels of Unit III.

At the lowest levels of Unit III-B, irregular bedrock was covered by an uneven layer of brown soil with relatively few inclusions, ca. 5-20 cm thick. A few artifacts were recovered, revealing some earlier cultural activity, including a broken grinding surface found near the bedrock. Diagnostic ceramics from this lowest level were low-quality and appeared to be domestic wares, and were only broadly diagnostic to the Formative Period. This stratum seems to have been covered by irregular patches of reddish-brown clay.
The stratum above this, perhaps 30-40 cm thick, contained the majority of evidence related to human activity. A compact layer of reddish-brown clay, irregularly distributed across the unit and containing several small pits or features filled with loose gray soil, marked the beginning of this stratum. In the southwest corner of the unit, we uncovered a number of human remains located in a pocket of looser gray soil (Figure 5.25). This feature (CF-06) extended over an area approximately 50-80 cm in diameter, and appeared to represent series of secondary burials, as the bones were not articulated and only included the partial remains of three individuals, including a (probably) adult female, an infant, and a sub-adult younger than 16-17 years of age.

Figure 5.25. Funerary context in Unit III-B (CF-06) with adjacent reddish clay areas.
An additional burial context (CF-07) was located in the southeast section of Unit III-B, extending into the profile wall. Unlike CF-06, it appeared to be a primary burial, and was marked by flat, vertically-placed stones on the north, south, east of the remains, creating a cavity of loosely soil which mixed into the surrounding soil and clay (Figure 5.26). CF-07 contained a most of a complete individual, relatively well-preserved and articulated and placed in a seated flexed position facing to the west. Located adjacent to this individual were the partial remains of at least two other individuals, consisting of the mandible and small long-bone fragments of an infant, and one ilium and partial humerus.

Figure 5.26. Funerary context in Unit III-B (CF-07), extending into SE profile wall.

Right: CF-07 in process of excavation. Left: Burial structure fully exposed, consisting of three flat stones placed upright around the body.
of a sub-adult. These remains were placed with no clear positional relationship to each other or to the first complete individual, and may have been interred separately at a later date.

During the excavation of these funerary contexts, the unit was disturbed overnight by a looting attempt, which destroyed much of the context around CF-06 and the southern half of the unit. The looters apparently missed CF-07, which had only just been exposed, and the context around this burial was preserved. We screened the soil from this disturbance to recover any remaining artifacts and bones and the human bones that were assigned to CF-06, but the exact provenience of these artifacts can only be roughly estimated.

The uppermost stratum of Unit III-B consisted of homogenous sediment which appeared to be fill extending to about 30-35 cm below the surface. Most of the diagnostic ceramics in this stratum dated to the Early Intermediate Period and the Late Formative Phase, although a small number of later ceramics were recovered near the surface of the unit. Most of the EIP ceramic fragments, which were relatively few in number, largely belonged to a local style (tentatively named “Local EIP”) which was found in the earlier levels of EIP deposits throughout the site.

With the exception of a few ceramic fragments probably dating to the early EIP in the excavation levels closest to the surface, the ceramics were mostly homogenous and undecorated domestic wares diagnostic to the Formative Period by surface treatment, paste composition, and occasionally rim form. Assuming some chronological continuity between the different strata, interpreting the occupation phases of these units as dating to
the Late Formative Period and the early EIP transition is reasonable. Although few artifacts were recovered, a relatively large number of domestic lithic tools and materials were recovered in all levels. These include several obsidian debitage fragments, a large fragment of white chert, a well-made andesite projectile point, and a several ground stone tools (Figure 5.27). The assemblage of animal bone was dominated by camelid, as in most other areas of the site, although a slightly higher percentage of these bones were identified as cervid (deer) than was expected.

Figure 5.27. Lithic artifacts from Unit III-B.
Although little horizontal area was exposed in the excavation of Units III and III-B, a number of observations and connections between the two can be drawn. First, these units possess similar stratigraphy and the bulk of human activity appears to have occurred towards the later centuries of the Late Formative Period. However, this occupation phase in Unit III seems to be covered with greater amounts of fill, while Unit III-B lacks the later Early Intermediate Period and Middle Horizon ceramics recovered from the upper stratum of Unit III. The human burials in each unit appear to be roughly contemporary, and the primary burials in CF-04 and CF-07 show broad similarities of practice, although the sample size is small.

Taken together, these units suggest that this area was the locus of domestic activities in the Late Formative Phase (and possibly earlier). Sometime near the transition to the Early Intermediate Period, a series of events over perhaps the scale of decades or a century occurred. These include multiple burials, the remains of a domestic structure destroyed by fire, and the abandonment of this area. This area then may have been covered with a small amount of fill intentionally and/or simply abandoned and left to be covered by natural processes.

However, several features of the surface architecture in this area and the site history of Minaspata itself are inconsistent with this interpretation. Most notably, it seems improbable that the large open spaces in this part of the site would have been fully landscaped in the beginning of the EIP and then left untouched during subsequent occupation and remodeling of the site during the Late Intermediate Period and Late Horizon. An alternative interpretation is that a more substantial subsequent EIP
occupation overlaid the Late Formative Period occupation in this area, but that both Units III and III-B (representing a total of 8 square meters in an section of the site perhaps thousands of square meters in size) missed evidence of EIP activity and building foundations. This EIP occupation was perhaps distributed over this larger area of the site creating an uneven topography, which was later removed and dumped elsewhere to create a flat, landscaped and terraced set of plazas.

Although determining the agents behind this action is difficult without radiocarbon dates or diagnostic material culture, the presence of several Inca structures located to the southwest suggest that this landscaping and wall-construction could have been part of the Inca effort to transform Minaspata during the Late Horizon. While there is little material evidence for this from the excavation of Units III and III-B, if the area was subject to modification late in the Inca Period, construction may have been halted and the site abandoned with the arrival of the Spanish to the Cusco region in 1532 CE, and little material or diagnostic temporal record would have been left on the surface. While resolving these two conflicting interpretations is difficult without further excavation, the latter seems more likely, given the site history, archaeological evidence from other units, and tendencies of Inca architects to create highly ordered and terraced landscapes in important Inca sites and royal estates elsewhere (e.g., Gasparini and Margolies 1980; Hyslop 1990; Nair 2015; Niles 1987).

10 A similar process seems to have been responsible for creating the stratigraphic record of Unit 1.
Unit IV-Ext Summary

Unit IV was originally placed as a 2x2 meter test unit on the southern part of a low terraced hill towards the northern section of Minaspata. Above the terraced section, the hill (rising perhaps 8-10 meters above the surrounding topography) contained a number of small rectilinear spaces or chambers formed by large collapsed walls made of rough stone construction, similar to the walls surrounding Unit II-Ext (Figure 5.28). A wooden cross had placed on the western side of the summit, adjacent to several rocky outcroppings, and evidence of modern-day veneration was evident in the form of regular offerings of coca, food, and alcohol left around the base of the cross. A small alignment of cut stones, possibly a small wall foundation meant to restrict access at some point in time, was visible around the base of the stone outcropping against which the cross was placed. This stone alignment is consistent with pre-Columbian practices (particularly during the Inca Period) visible around the Cusco region, in which small walls were constructed around particularly important stone outcroppings viewed as *huacas* in order to restrict visibility and access to the stones.11

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11 Examples of this practice can be seen at some tourist attractions around Cusco, such as the stone *huaca* at Q’enko.
Figure 5.28. Location of Unit IV-Ext. Lower left: modern-day cross placed atop rocky hill.
The summit of this hill appeared to be the subject of at least intermittent veneration by some members of the modern-day communities around the Lucre Basin. The evidence of Inca-style “huaca-marking” practices in the form of small walls surrounding one of the rocky outcroppings suggest that the importance of this peak may have extended back into pre-Columbian times. Unit IV was placed in one of the spaces created by the fallen stone walls about 40 meters east of this peak with, and was intended to identify any evidence of ritual practices related to the veneration of this apparent huaca.

The excavation of Unit IV revealed a fair amount of activity dating to the Late Horizon (Inca Period) and to the Early Intermediate Period, including a midden and a number of small walls. Although no direct evidence was recovered suggesting in situ ritual practices took place here, I decided to expand this unit partly to broaden the horizontal exposure in this area and gain a better understanding of the types of activities which took place, as well as to follow the extension of the midden to the west and one of the walls to the north. Subunits IV-A, IV-B and IV-C were placed to the northwest, north, and west of Unit IV respectively, forming a larger 4x4 meter unit. These four subunits will be collectively referred to as Unit IV-Ext (or “IV-extensions”).

The excavation of the Unit IV extensions revealed a complex stratigraphy and evidence of occupations from the EIP, the LIP, and the Late Horizon. However, a good portion of the earlier phases seem to have been removed during the Late Horizon, and the evidence of activity from the EIP and LIP was not uniformly distributed across the unit: an EIP phase was not located in Subunit IV-A but this subunit contained a discrete
stratum of LIP material culture close to the bedrock, which was mostly lacking in the other parts of the unit.\textsuperscript{12}

Furthermore, much of the evidence of these earlier phases occurs near uneven bedrock that is relatively close to the surface in the western part of the larger unit (Subunits IV-A and IV-C). The unit was excavated until bedrock, but whereas this was encountered at a depth of approximately 1.3 meters in Unit IV on the eastern side, bedrock was encountered at a depth of between 45 and 65 cm in Subunits IV-A and IV-C.

\textbf{Figure 5.29.} Subunits IV-A and IV-C, fully excavated, revealing the underlying bedrock.

\textsuperscript{12} Diagnostic material culture dating to the LIP did occur elsewhere in the unit, but was mainly mixed with larger amounts of Inca style ceramics.
(Figure 5.29). The combination of these factors, and a great deal of complicated activity (including copious amounts of trash deposition) during the Late Horizon, made the sequence of events in Unit IV-Ext difficult to interpret.

Nonetheless, some patterns can be identified, and the EIP phase seemed to be reasonably well-preserved, particularly in Subunits IV and IV-B. The lowest stratum in Subunits IV, IV-B and along the southern half of IV-C contained diagnostic material exclusively dating to the EIP, including large amounts of Qotakalli style pottery. Due to the topography of the bedrock, this deposit reached 60-70 cm in thickness on the eastern side of the larger unit, but only covered 15-30 cm of compact fill in Subunit IV-C. The sediment varied in consistency, but no features were identified in this stratum. Two small single-row stone alignments were identified close to bedrock, one in the southwest corner of Subunit IV and one in the eastern portion of IV-B, although only small portions (ca. 20-30 cm) of each alignment was exposed.

This Early Intermediate Period stratum in Subunit IV, IV-C, and the northern part of IV-B seemed to blend relatively seamlessly into later deposits, with no sharp stratigraphic break. However, the upper limits of this stratum are stratigraphically contiguous with a series of architectural features in IV and IV-B, which seem to cap the later phases of occupation during the EIP in Unit IV-Ext. The most notable of these features was a small, well-constructed cobble-stone floor placed in the center of Subunit IV-B (R-144), sealing the EIP deposits below it (Figure 5.30). The floor was oriented to the inter-cardinal directions and was 1.2 meters long and 1.15 meters wide. A thin (3-5 cm) layer of compact soil on top of the floor was distinguishable from the looser
sediment above it, suggesting it may have been left exposed after its use was discontinued. A radiocarbon date taken from the mortar between stones in the floor was calibrated to 423-557 CE (95.4% CI), with the bulk of the calibration curve falling between 430-492 CE (56.4% CI).

Placed atop the northwestern, northeastern, and southeastern edges of the cobblestone floor were a series of small architecture features (A-126, A-122, and A-61, respectively), averaging about 40 cm in height (Figure 5.31). The A-122 and A-61 architectural features were constructed in a similar fashion, with two rows of upright flat stones filled with a soil and rubble core, forming a structure about 35-40 cm thick. A-126,
by contrast, was composed of a single upright, flat stone, about 40 cm high, and a lower, longer, and wider stone of irregularly-shaped volcanic rock. A small extension consisting of a single row of flat, upright stones was placed on the southwest corner, but only extended ca. 30 cm to the northwest. This may have been a later addition, but also may represent a wall bordering the southwest of the floor that was later partly dismantled. While these architectural features are probably not robust enough to serve as wall foundations to larger adobe walls, they clearly served to delimit the small activity space represented by the cobblestone floor. However, any evidence of the nature of the activity performed in this space was removed or erased by subsequent occupations, and this space seems to have been used predominantly for trash deposit during the Late Horizon (see below).

Extending from the southwest corner of these walls to the southern profile wall of Subunit IV was an alignment of five large, roughly rounded stones (Figure 5.31). The purpose and full extent of this alignment is unclear, but it may have served as a wall foundation, and was stratigraphically associated with the upper limits of the EIP fill in Unit IV-Ext.

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13 While the construction of this feature might suggest a later addition, it also was placed directly on top of the edge of the cobblestone floor and was embedded in EIP sediment to the north, indicating that it probably was constructed at the same time.
Figure 5.31. Architectural foundations and features dating to the Late EIP Phase in Subunits IV-B and IV.
This part of Minaspata seems to have been abandoned at the conclusion of the EIP, as no evidence of Middle Horizon activity was recovered from Unit IV-Ext, with the exception of a few diagnostic fragments randomly distributed in later trash deposits. However, evidence for a discrete occupation dating to the Late Intermediate Period, probably beginning in the 12th or 13th centuries CE, can be found in the northwestern part of the unit. The diagnostic material culture closest to the bedrock generally dates to the LIP based on ceramic style, although the excavation layer immediately above the shallow bedrock was almost sterile. Irregular stone alignments cross each other on the lowest level, using unshaped stones and small boulders, suggesting frequent reconstruction and reuse of relatively *ad hoc* structures.

Above these, and close to the surface, a well-constructed, double-coursed wall foundation was constructed extending just over two meters from the northwest corner of Unit IV-Ext to the center of the unit (A-121) (Figure 5.32). The depth of this wall foundation suggests that it was probably constructed towards the mid- to late-LIP. A row of unworked stones was informally added to the end of this wall foundation at a right angle (A-123), extending a distance to the southwest into Subunit IV-C, suggesting a later addition that may have involved changing the course of this wall.

In any case, the deposits on either side of the wall foundation are distinct enough to suggest that the interior of this space may have been located to the southwest. In this area, we uncovered a deposit of large Lucre style ceramic fragments dating to the LIP under a layer of stones continuing into the western profile wall of Unit IV-Ext (Feature R-126). Many of the fragments were refitted, indicating that they may have been broken
in place intentionally, and those for which form could be identified appeared to all be large restricted-neck jars. These fragments appear to be a variant or substyle of Lucre ceramics, involving a particular design that included double-stem pendant motifs (Figure 5.33). This motif is rare in contemporary Killke style pottery, but become fairly common and distinctive in later Inca style pottery, particularly on the large aribalo jars.

Figure 5.32. Architectural foundations and features dating to the LIP in Unit IV-Ext.
Figure 5.33. Wall foundation A-121 and Feature R-126 in Subunit IV-A (a); R-126 excavated, exposing ceramic deposit (b); Large ceramic jar recovered from R-126 (c).
The ceramic deposit was sealed by the layer of stones covering it. Two radiocarbon dates taken from the ceramic deposit give dates of 1286-1393 CE and 1156-1265 CE (95.4% CI), although the later date is more likely, due to the stratigraphy. This date may also roughly indicate that the abandonment of the structure occurred in the late LIP, as very little sediment separated the deposit of ceramics and the wall fall covering it, and the ceramics seem to intrude through any floor which may have been associated with the interior of the wall.

North of the wall foundation and extending east, on the other hand, contained evidence of a space used primarily for the dumping of trash and burnt material. Several discrete scatters of ceramic sherds, predominantly Inca in style, were found throughout this area and appear to be roughly contemporary (Figure 5.34). These deposits extend across much of the unit, covering the northern part of Subunit IV-A and much of IV-B and IV, including the space above the earlier EIP cobblestone floor and associated architectural features. Large quantities of faunal remains, along with large chunks or dense deposits of carbon, were also mixed with the ceramics. An ash lens containing burnt Inca ceramic fragments in the northwest corner of Unit IV-Ext (north the wall foundation in that area) produced a radiocarbon date of 1392-1445 CE (95.4% CI), suggesting that much of this material was dumped here fairly rapidly (and indiscriminately) in the early part of the 15th century CE. This activity is likely part of the early phase of Inca occupation at Minaspata.
The largest of these trash deposits was a midden feature, about 95 cm long and 75 cm wide, extending through the south-central part of Unit IV-Ext (Figure 5.35). The top of this midden is associated with Late Horizon strata relatively close to the surface, but appears to have been dug into earlier deposits, extending down about a meter in depth until bedrock. The midden was composed of dense quantities of ceramic fragments, broken stone and some lithic tool fragments, and faunal remains. This material was deposited rapidly, probably sometime in the early Late Horizon: although the predominant styles represented in the feature date are Inca and Lucre, other diagnostic ceramics from the LIP, EIP, and small quantities from the Middle Horizon are distributed
throughout the feature. This feature, and the others extending throughout Unit IV-Ext, subsequently covered by a layer of natural fill, most likely after the abandonment of Minaspata in the early 16th century.

Figure 5.35. Midden deposit in Subunit IV -- first exposed (a) and more fully excavated (b).

Unit V Summary

Unit V was a 4x1 meter excavation unit placed to investigate the form and function of the terraces found throughout the site, whether as loci of domestic activity, craft production, agricultural intensification, or other uses. Seven to ten long terraces flanked a low area covered with dense piles of stones in the northeastern part of the Western Sector of Minaspata, forming a depression between higher-elevation areas to the
west, east and south (Figure 5.36). The exterior facing walls of these terraces tend to be partially collapsed to different degrees, creating the appearance of sloped piles of unworked stones, rather than well-constructed vertical retaining walls. However, the platforms of these terraces appear mostly intact. The stones covering the lower parts of the depressed area are possibly natural rock fall from formations higher up, which may have covered this area naturally over the last few hundred years.

Unit V was placed at the midpoint of a terrace on the southeastern side above this rock-covered area, which measured approximately 7.5 meters wide and 38 meters long. The long axis of Unit V was aligned north-south. The northern edge of Unit V was about

Figure 5.36. Terraces on hillside of Minaspata near the location of Unit IV-Ext and Unit V.
a meter from the outer terrace wall, while the southern edge was about a meter from a sloped pile of stones representing the collapsed outer wall of the next terrace. No surface structures could be identified on the terrace where Unit V was located (or on any other terraces).

While the excavation of Unit V did not provide any firm evidence indicating the nature of activity which took place on the terrace platform, this area was probably in use by the Late Formative Period and continued throughout the Early Intermediate Period. Relatively few diagnostic ceramics were recovered, and these included Qotakalli, Waru, Muyu Urqo and Chanapata styles. The rest of the decorated ceramics are poorly known chronologically and appear to be local variants of various styles, or contain idiosyncratic features that make firm stylistic identification difficult. In addition, few lithic tools were recovered, and animal remains were much less numerous than those recovered from similar-sized contexts in other units. No radiocarbon samples collected from Unit V were processed.

Understanding the sequence of events uncovered in Unit V requires considering the archaeological remains in the context of the terrace upon which it was located. The terrace appears to have been constructed in two different phases. A relatively level rubble fill, consisting of densely packed large stones and loose soil, appears to form the lowest layer of Unit V and extends throughout most of the unit (Figure 5.37). This fill was encountered ca. 80 cm below the surface. Excavation continued an additional 30-40 cm into the rubble layer, but ceased at a depth of 1.1-1.2 meters below the surface, once it
was clear that the rubble continued for some depth. It probably formed the underlying structure of the terrace platform for the first phase of construction.

![Figure 5.37. Unit V fully exposed, showing lowest level of rubble fill and later architectural feature A-81.](image)

This rubble fill was then covered by a 10-15 cm thick layer of sediment, the top of which was compacted into an earthen surface or floor (R-85), which may have represented the platform surface associated with the rubble fill (Figure 5.38). This surface extended the full width of the unit, but was only evident in the southern half of Unit V. It probably originally extended to the northern edge of the terrace platform, but appears to have been destroyed by later additions to the terrace walls. Although few diagnostic ceramics were recovered from this surface (or the sediment beneath it), all were from the Late Formative Period, providing a relative date for this platform construction.
Figure 5.38. Compact earthen surface (Feature R-85) adjacent to rubble fill in Unit V.
At some point, the terrace seems to have been raised and extended by additional construction. Although the narrow dimensions of the excavation unit limits interpretation, two rows of large boulders, parallel with the terrace face, were placed on top of this rubble fill in the north side of the unit (Figure 5.39). These rows of boulders, which may have served as retaining walls, were filled with earth and smaller stones between them. In the southern half of the unit, the earthen surface was covered with a ca. 30 cm layer of sediment and cobblestone fill, the top of which was level with the rock fill in the northern half. Diagnostic ceramics recovered from this fill mainly dated to the beginning of the Early Intermediate Period, suggesting this probably occurred sometime in the 4th or 5th century CE. Another compact earthen surface was identified on top of this sediment (R-82), likely representing the new terrace platform surface after the terrace was raised and the retaining wall likely extended outward. This surface appears to have been resurfaced at least twice, as two additional thin, successive layers of compacted sediment were identified immediately above the original surface (R-81). In addition, a stone wall foundation was also constructed south of these earthen surfaces, on the southern side of Unit V (A-81) (Figure 5.40). Its construction appears to be stratigraphically associated with the compacted surfaces, and is probably contemporary with them. While no clear evidence was recovered associated with this stratum that indicates the nature of these features, it is possible that the construction of a wall on this terrace may have been domestic in nature; in any case, it seems to rule out the possibility that these terraces were used for growing crops.
Figure 5.39. Northern half of Unit V, showing two rows of larger stones possibly placed as retaining walls for terrace expansion.

Figure 5.40. UE V with wall foundation (A-81), a lower earthen surface (R-82), and a refinished surface atop this (R-81).
These features occurred close to the surface and appear to have been covered by a thin layer of naturally deposited sediment. The diagnostic ceramics suggest that the first phase of terrace construction and use occurred in the Late Formative Period, with subsequent expansion and activity dating to the Early Intermediate Period. The wall foundation in the south side of Unit V and associated earthen surfaces may have been in use for some time, but no further evidence of later occupation or activity was found in this area.

**Occupation Phases at Minaspata: The Formative Period**

Minaspata was probably one of the largest villages in the Cusco region during the Formative Period. Evidence of occupation going back to the Middle Formative Phase (1500-500 BCE) was recovered from Unit I, with a radiocarbon date recovered from the lowest levels of this unit placing the beginning of occupation at Minaspata at 800 BCE, and further excavation may reveal evidence of earlier occupation elsewhere on the site. Occupation of the site appears to have expanded significantly during the Late Formative Phase (500 BCE-300 CE), with components from this period appearing near the bedrock in widely distributed areas of the site, including the areas around Unit I, Unit II-Ext, Unit III and III-B, and Unit V.14

Although relatively little of the horizontal excavation at Minaspata in 2013 exposed Formative Period contexts, some patterns and practices can be discussed. Ceramic fragments from Formative Period contexts appear broadly consistent with

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14 Dwyer’s 1982 excavations, located in the northwest section of Minaspata, also revealed a substantial Formative component, widening the distribution of Formative remains even further (1986).
descriptions of ceramics recovered from other Formative Period sites in the Cusco region, such as Marcavalle, Ak’awillay, and Yuthu (Bélisle 2011; Chávez 1977; Davis 2010; Davis and Delgado 2009; see also Bauer 1999, 2002; Covey 2014; Rowe 1944). These include the Marcavalle and Chanapata ceramic styles, although too few ceramics from earlier contexts were recovered to determine the degree of variation (if any) in these styles between Minaspata and other regional sites. While Chanapata style ceramics are more widely distributed across the Cusco region (i.e., Bauer 1999, 2004; Bélisle 2011; Covey 2014; Davis 2010), Marcavalle-style ceramics, strictly defined, do not appear much beyond the Cuzco Valley (Bauer 1999:126). However, a Marcavalle component has long been recognized at Minaspata (Dwyer 1971:11–12, 41) and Karen Mohr-Chávez has suggested an intense relationship between the two sites, noting that Marcavalle ceramic material from Minaspata from earlier projects is virtually identical to that from the site of Marcavalle itself (Chávez 1977:1011). The presence of these Formative Period ceramic styles at Minaspata suggest that the village was part of a regional network of exchange and interaction from its initial settlement, and that many different parts of the Cusco region shared at least some common cultural ideas and material practices.

Several other material practices during the Formative Period can also be identified. Although the site appears to have been extensively modified in later periods, at least some of aspects of the topography and built landscape of Minaspata were formed during the Formative Period and lasted for over 1000 years, such as the construction of terraces in the area where Unit V was located. The wall foundation identified from the Late Formative context in Unit I suggests that buildings were constructed with a stone
foundation set into the surrounding soil, while the upper portion of the walls were
constructed with a less permanent material (most likely adobe) - a construction practice
that seems to have been used in all subsequent time periods and extends into the modern
day.\textsuperscript{15} The use of reddish-brown clay as a possible floor surface was also identified in
Unit III-B, although this practice seems to have died out after the Late Formative
Period.\textsuperscript{16} The recovery of a total of 68 total fragments of obsidian debitage from
Formative contexts (52 came from Unit I) demonstrate that Minaspata was engaged in
long-distance interaction and exchange from the beginnings of its occupation.

However, human burials provided the most consistent and widespread data on
Formative Period cultural practices at Minaspata. All of the excavated burial contexts,
with the exception of one partially-preserved primary burial located in Unit II-Ext, date to
the Late Formative Period (a total of 4 funerary contexts: two primary burials in Unit I
and Unit III, a primary burial associated with the partial secondary remains of two
additional individuals in Unit III-B, and a fourth containing the partial secondary remains
of three individuals, also in Unit III-B.) All three individuals recovered from primary
burial contexts were placed in a flexed position, lacked associated grave goods, and
showed no indications of premortum or perimortum physical trauma. Otherwise,

\textsuperscript{15} In later periods, evidence suggests that these walls and the foundations would have been covered in a
layer of adobe and ichu grass (known locally as reboque) and possibly white gypsum plaster. These
additional layers would protect the adobe walls from damage due to rain and other weather, and this
construction practice may extend back into the Formative Period; however, no direct evidence of this
practice was identified for Formative Period constructions at Minaspata. This is most likely because only
one stone wall foundation from this time period was identified during excavations.

\textsuperscript{16} Reddish clay appears to have also been used to form the Inca floor surface in Unit II-Ext, but this does
not seem to have been an adoption of a continuing practice, as it was not identified in any other time
periods.
however, the burial practices varied: one individual was placed vertically in a small stone-lined pit with a capstone and covered with loose soil; another was placed prone at the interior corner of a small stone wall foundation and possibly marked with an upright stone, then covered with compact fill; and the third was interred in a small cavity created by stones (Unit III-B) with fragments of human remains placed nearby and then covered with loosely compacted soil.

Although the sample size from Minaspata is small, these practices are consistent with the type of burials recovered from the Late Formative Period site of Yuthu, located northwest of Cusco: individuals were also buried in a flexed position without grave goods, in both primary and secondary contexts, with no clear pattern in body orientation associated with sex, age, or burial sector (Davis 2010:95–98). Broadly speaking, this patterning (or lack thereof) indicates an absence of noticeable social difference during the Late Formative Period at Minaspata as well as at Yuthu, at least as reflected in the burial treatment of human remains. Beyond this rather anodyne observation, however, the lack of consistency could suggest a couple of different interpretations - a variety of competing ideas about the proper burial of the dead; a lack of concern about the specifics of “proper” burial or the afterlife; or potentially several different smaller communities (or ethnic groups) cohabitating together in different areas of Minaspata, generally bound together through common material culture but with slightly different cultural practices. There seems to be little else (such as variety in ceramic style or other material culture) which would indicate spatially patterned sub-communities, however. In any case, more research is needed to advance beyond speculation.
Secondary burials were partial, with only some bones included in the reburial phase of the funerary sequence. The bones from contexts indicating secondary reburial recovered from Unit III-B were recovered in a good state of preservation, indicating that these missing bones were not the result of decay but rather deposition practices. However, the partial remains from these secondary contexts were generally not articulated, so it is doubtful that they represented mummified or bound bodies which were later reburied, as described for some Late Formative Period burials at Yuthu (Davis 2010:100–102). Some of the bones from these individuals may have been buried elsewhere, but this is speculative.

While one other human burial context was recovered from Unit II-Ext, dating to the early EIP and deposited in fill above a wall foundation, the disappearance of human funerary contexts from excavated areas of the site apart from this suggests that burial practices may have changed with the onset of the EIP ca. 300 CE, and the appearance of radically distinct ceramics at Minaspata and elsewhere in the Cusco region. Perhaps deceased individuals were buried in concentrated areas away from habitation, or even off-site. Certainly by the Late Intermediate Period, burial practices had changed significantly, and many (if not all) individuals were probably deposited in open sepulcher towers (known as *chullpas*) or in other off-site locations, such as caves and cliff faces.

**Occupation Phases at Minaspata: Early Intermediate Period**

Minaspata seems to increase in size and density at the beginning of the Early Intermediate Period. The 2013 excavations revealed a substantial occupation during this
period, as demonstrated by thick strata of occupation debris containing multiple phases of
collection and dense quantities of EIP ceramics. Qotakalli style ceramics are
particularly numerous, but other styles, such as Waru and local EIP styles, are also
present in smaller numbers. The transition between the Late Formative Period and the
Early Intermediate Period at Minaspata is heralded not only by a change in ceramics (and
possibly burial practices), but also by rapid construction and renovation projects.\textsuperscript{17}
Evidence of occupation activity occurs for the first time on top of the bedrock in Unit IV-
Ext, suggesting an expansion to new areas of the site and a possible increase in
population density. Terraces around Unit V appear to have been refaced and expanded at
this time as well. In Unit III, a probable domestic structure was constructed atop Late
Formative Period remains at the beginning of the EIP, only to be abandoned some time
later, when the structure was apparently destroyed by fire. Finally, the well-constructed
stone wall foundation identified in the lowest excavation levels of Unit II-Ext dates to
this transition, as both Late Formative and Early Intermediate Period ceramics were
recovered from the sediment surrounding the wall foundation.

Construction and renovation of architectural spaces continues at a rapid pace
throughout the subsequent three centuries. In Unit II-Ext, this wall foundation was partly
dismantled and covered with 15-20 cm of fill, and a partial human burial (likely a
primary burial, but in a poor state of preservation) was placed in this fill a few
centimeters above the wall foundation. Three discrete phases of activity follow this event

\textsuperscript{17} Given how little horizontal area of Late Formative Period contexts was exposed, however, it is difficult
to say whether this represents a new practice, or whether rapid construction and frequent renovation was
common in earlier occupation phases as well.
throughout the EIP, represented by the construction of small steps or stone alignments, larger wall foundations overlapping each other, and thick deposits of sediment containing dense quantities of EIP ceramics and other material culture. These new architectural features are oriented either parallel or perpendicular to the orientation of the lowest wall foundation, and appear to be conforming to a general rectilinear grid established by earlier construction activity.

Fill containing EIP diagnostic material continued to accumulate on top of the bedrock in Unit IV-Ext as well, until a small, roughly 1-meter square cobblestone floor was constructed sometime in the 5th century CE. This floor was associated with several low walls defining a rectangular space; a more substantial stone wall foundation was also constructed extending to the south. While the nature of these constructions and this small activity space is unclear, they do seem to represent a significant change in the use of this area; unfortunately, firmer interpretations are not possible without more data.

Three radiocarbon dates - one from the floor constructed in Unit IV-Ext, and two from Unit II-Ext - range from the early 5th century to the late 6th century CE, which are consistent with dates published for the EIP elsewhere in the region. The two dates in Unit II-Ext come from samples separated by 45-50 cm of sediment; the lowest of these samples most likely dates to the mid/late 5th century CE (although it may date to the 6th century - see Appendix B for a discussion). However, this sample does not date the beginning of the EIP at Minaspata - it comes from a secure context located 50-60 cm above the excavation level containing the earliest appearance of EIP ceramics, and it seems likely that this period begins sometime between 300 and 400 CE at Minaspata.
Construction methods of walls and wall foundations vary somewhat throughout the EIP. The earliest wall foundation uncovered in Unit II-Ext, for example, is well constructed with a clear effort made to create flat exterior faces. A more substantial wall foundation in a subsequent EIP construction phase, however, was constructed more haphazardly, with a larger range of stone sizes and shapes and no effort made to face the exterior surfaces. The latest phase of construction during the EIP reveals yet another construction style, with smaller walls made with flatter, more uniformly shaped stones stacked atop each other. In addition, the smaller walls in Unit IV-Ext associated with the cobblestone floor reveal yet another unique form not found elsewhere on the site during the EIP. These variations in construction style may indicate some evolution in methods and technique over time, but more likely are due to different intended functions for these constructions, revealing a flexible approach to construction and renovation.

The Early Intermediate Period seems to have been a time of rapid growth and expansion at Minaspata, one which seems to mirror developments elsewhere in the Cusco region. The sudden appearance of Qotakalli and other new styles of ceramics during the EIP (such as Waru and other local variations), in addition to significant shifts in settlement pattern across the region (Bauer 2004; Covey 2006, 2014) have led some scholars to speculate that these changes may reflect a migration of new populations into the Cusco region (McEwan 2012). While much more research on the material practices of both Late Formative Period and Early Intermediate Period settlements is needed to test this hypothesis, the archaeological record at Minaspata is consistent with this possibility. In any case, the transition between the Early Intermediate Period and the Formative
Period seems to have been rapid and universal across the site. While Bélisle reports that Chanapata style ceramics continue in use alongside Qotakalli ceramics up until the beginning of the Middle Horizon at the site of Ak’awillay (Bélisle 2011; Bélisle and Quispe-Bustamante 2017), this does not seem to be the case at Minaspata, where Qotakalli and other EIP ceramic styles replace Chanapata style ceramics rapidly.

**Occupation Phases at Minaspata: Middle Horizon**

The intense activity at Minaspata during the Early Intermediate Period changes drastically with the beginning of the Middle Horizon. This period, beginning around 600 CE, is typically associated with the Wari state and the colonization of the Cusco region (Bauer 2004; Glowacki 2002; Glowacki & McEwan 2001; McEwan 1987, 1991, 1996, 2005; Skidmore 2014). In some areas of the Cusco region, settlement survey and excavation has suggested that existing EIP communities mainly continued with little impact to their daily lives (Bauer 2004; Bélisle 2011, 2015; Bélisle and Covey 2010; Covey et al. 2013) (Chapter 3). However, along the Vilcanota River valley, the impact was much more severe: Wari colonies were established at Pikillacta (McEwan 1991, 2005), and in the Huaro Valley, ca. 20 km south along the Vilcanota River (Glowacki 2002; Glowacki and McEwan 2001; Skidmore 2014), while evidence for a Wari occupation was identified at Choquepukio (Gibaja Oviedo 2016). McEwan (1984a) has argued that the Lucre Basin was transformed into a “Greater Pikillacta” designed to serve the labor and supply needs of the Wari state during the Middle Horizon. Given the proximity of Minaspata to the major Wari occupations at Pikillacta and Choquepukio, we
expected to see a substantial occupation at Minaspata continuing into the Middle Horizon, albeit with potentially major impacts or changes in the configuration of architectural spaces and material culture, and a possible influx of select Wari pottery or other materials.

However, the opposite seems to have been the case: Minaspata seems to have been largely, if not entirely, abandoned during the Middle Horizon. Units placed in three different areas of the site show substantial EIP occupations what were abandoned or greatly reduced at or around 600 CE. Occupation was discontinued on top of the terrace where Unit V was placed, and the excavation of Unit IV-Ext revealed a gap in activity between the Early Intermediate Period and Late Intermediate Periods (from 600-1000 CE or slightly later, during the entirety of the Middle Horizon and possibly the beginning of the LIP). In Unit II-Ext, a terminal-EIP phase construction project, represented by a large pit cutting into earlier constructions and filled above contemporary levels with large stones and loose soil, seems to have been abandoned before being finished. A radiocarbon date from an associated context indicates this occurred in the final decades of the 6th century, suggesting that the EIP occupation in this area of the site ended abruptly, more or less with the arrival of the Wari state to the Lucre Basin ca. 600 CE.

In fact, the only evidence for any Middle Horizon activity anywhere on Minaspata comes from Unit II-Ext, just above this dated terminal-EIP context. This evidence consists of a thin (less than 5 cm) layer of compacted soil associated with two radiocarbon samples which date to the 7th/8th century and to the 8th/9th century CE. This surface was only present in the northern part of Unit II-Ext, and almost no direct
evidence of activity was recovered from this surface. A small number (17) of Middle Horizon ceramics, belonging to the Araway or Muyu Roqo styles, were recovered from this surface, but these represented small broken fragments of different vessels. This surface was subsequently covered by several features which were all radiocarbon dated to the beginning of the 11th century and were associated with Late Intermediate Period style pottery. This context represents the earliest appearance of Middle Horizon ceramics in Unit II-Ext, and - crucially - the only possible Middle Horizon context excavated anywhere at Minaspata in 2013.

This compact surface bears no evidence of either intentional floor construction nor intensive occupation, and is better interpreted as a surface left exposed for some time and lightly (but unevenly) compacted by possible intermittent or ephemeral cultural activity, and by exposure to rain, wind, and other elements. Several pieces of evidence support this interpretation: the surface is compact but also soft or non-existent in a few spots; it is less than 5 cm in thickness, and is located directly on top of a stratum of probable fill representing the terminal phase of the EIP; diagnostic ceramics recovered from the surface included not only those from styles dating to the Middle Horizon, but also a small number of Lucre style ceramics dating to the early Late Intermediate Period; and finally, that the surface only seemed to exist in Subunits II-A and II-B, north of a substantial wall foundation constructed in the Early Intermediate Period, suggesting it may have been an exterior space exposed to the elements.

The two radiocarbon dates recovered from the surface only overlap in date ranges very slightly, in the middle of the 8th century. Given this, and the interpretation of the
surface described above, there are a few different ways to understand these dates. The most likely scenario is that this surface may have been left exposed and only lightly or intermittently used - perhaps as the product of ephemeral (and perhaps unsanctioned) squatting or other limited activity. These radiocarbon samples would have been deposited over a longer period of time as a result of this light, intermittent activity. A second possibility is that it was an aborted attempt at establishing a more permanent occupation, and that the earlier radiocarbon date represents an example of the “old wood problem” (in which the sample ceased to absorb new carbon from the environment decades or more before it was deposited). However, the absence of any other evidence of intentional activity, in Unit II-Ext or elsewhere on Minaspata during the Middle Horizon, makes this interpretation less likely.

One additional interpretation of this surface (and the radiocarbon dates), however, is that the dates were deposited during the Middle Horizon on an exposed surface, but were not actually associated with direct cultural activity. In this scenario, either both dates suffer from the “old wood problem” and were deposited in the early LIP, or they may have been deposited naturally as carbon cast off by naturally occurring fires. This interpretation would suggest that there was no Middle Horizon cultural activity in this area - only later activity occurring as the site was reoccupied around 1000 CE (see below). The ceramic fragments dating to the Middle Horizon found on this level would have been broken and deposited as “curated” vessels still in use in the early LIP.\textsuperscript{18}

\textsuperscript{18} No Qotakalli style ceramics were recovered from this surface. While the appearance of the Qotakalli style defines the beginning of the EIP in the Cusco region, it appears to continue in use a few centuries into the Middle Horizon in most other parts of the Cusco region. However, there is no clear stylistic distinction
This interpretation does have some supporting evidence. In addition to the 17 ceramics dating to the Middle Horizon, the surface also contained 18 ceramics belonging to the Lucre style, which only emerges at the beginning of the Late Intermediate Period. The cultural stratum immediately overlaying this surface (which dated to the early LIP using both radiocarbon dates and diagnostic material culture - see below) also contained 8 Middle Horizon sherds and 12 LIP sherds, suggesting this “curated vessel” interpretation may be supported by the archaeological data. In fact, most of the ceramics belonging to Middle Horizon styles come from later contexts. Of the roughly 7000 diagnostic ceramics analyzed (Verify) that were recovered from Minaspata in 2013, only 128 could be definitely identified as belonging to styles dominant during the Middle Horizon; of these, only the 17 ceramics recovered from this surface in Subunits II-A and II-B came from a context which may (but not necessarily) represent Middle Horizon cultural activity. If most of these fragments actually represent curated vessels, produced elsewhere during the Middle Horizon and still in use as occupation began to expand again at Minaspata ca. 1000 CE, their deposition in the archaeological record may represent post-Middle Horizon activity in all contexts. This would mean that no evidence of Middle Horizon occupation was found anywhere on Minaspata.

between Qotakalli ceramics from the EIP and the Middle Horizon, so stylistic characteristics of Qotakalli ceramics cannot be used as a diagnostic marker after the EIP. Instead, we must rely on stratigraphy, radiocarbon dates, and other ceramics with more limited temporal distribution. The latest appearance of Qotakalli style ceramics from Unit II-Ext is in the uppermost level of EIP fill, immediately below the surface under discussion here. This context also provided the latest radiocarbon date for the EIP (Sample MC 1126), which was calibrated using Bayesian statistical analysis to 533-617 CE (95.4% CI). This date, and the context in which it was found, suggest that Qotakalli ceramics no longer appear at Minaspata following the beginning of the 7th century and the arrival of the Wari state.
In any case, this single, thin layer of compact sediment in the northern section of Unit II-Ext represents the only possible cultural activity during the Middle Horizon recovered from the 2013 excavations. Rather than indicating intensive activity, as originally anticipated, it appears that this activity was sporadic and ephemeral, if present at all. At minimum, this suggests that the population at Minaspata was markedly reduced ca. 600 CE, and the site may have been abandoned completely.\textsuperscript{19} It is unlikely that the arrival of Wari state colonists to the Lucre Basin is unrelated to this development.

**Occupation Phases at Minaspata: Late Intermediate Period**

In contrast to the drastic population reduction and/or abandonment of Minaspata in the Middle Horizon, the beginning of the Late Intermediate Period was again a period of growth and repopulation at Minaspata, at least in some areas. Evidence for intense and frequent activity, construction, and renovation of spaces begins in Unit II-Ext, in the form of new wall foundations, concentrated scatters of artifacts, and new accumulations of fill, all of which are associated with early Lucre style diagnostic ceramics. Four radiocarbon dates from contexts just above the “Middle Horizon” surface discussed above place this burst of activity all to a narrow window between 1005-1045 CE. One of these wall foundations may have aligned or connected with an earlier EIP wall. Shortly after these features were created, an additional large wall foundation was constructed running east-

\textsuperscript{19} To fully ascertain whether the site was partly or fully abandoned, it will be helpful to briefly examine the results from two other projects at Minaspata: excavations directed by Edward Dwyer in 1980-1981 (1986), and the more recent excavation project directed by the Ministry of Culture (Cusco) in 2014-2015 (Sabino Quispe 2016). These will be discussed briefly below, with implications for understanding the cultural sequence at Minaspata, particularly during the Middle Horizon.
west through the center of Unit II-Ext, also connecting to earlier EIP walls, integrating them into a more complex spatial arrangement. A second phase of construction, probably taking place between 1200 and 1400 CE, resulted in the establishment of architectural features in the south and west sides of Unit II-Ext. These phases of new architectural construction in this area testify to the continual reconfiguration and renovation of this space throughout the LIP.

While activity during the LIP seems to have been less intensive in Unit IV-Ext - occurring mostly in Subunit IV-A- some evidence for activity beginning probably around 1100-1200 is evident closer to the bedrock. A small structure was likely placed here slightly later, only to be abandoned in the 14th century CE, sometime before the Inca conquest of the Lucre Basin. This abandonment was marked with the burial of large broken fragments of Lucre style ceramics below the likely floor associated with the structure, destroying it in the process, which was then sealed by an apparent pile of wall fall. To what extent the abandonment of this structure is associated with the arrival of the Inca is unclear, and it may have been vacated for other reasons. While the LIP activity in Unit IV-Ext does not seem to intentionally interact with earlier EIP features, as it does in Unit II-Ext, neither do these earlier remains appear to have been modified or destroyed to make room for new constructions.

The reoccupation of Minaspata ca. 1000 CE does not appear to be comprehensive, however; while the areas where Units II-Ext and IV-Ext were placed show evidence of EIP occupations which are abandoned ca. 600 CE only to be reoccupied at the beginning of the LIP, the Early Intermediate Period occupations appear to be terminal in Units III
and V. However, preservation may have been a factor. Ethnohistoric documents suggest that the Inca attempted to convert Minaspata into a royal estate for the final ruler, Huascar, sometime in the 1520s (Espinoza Soriano 1974) (Chapter 3). By then, Minaspata had already undergone over a century of Inca occupation, and at least some areas of the site had already been significantly transformed. The Inca seem to have removed or destroyed much of the evidence of earlier occupation in Unit I and possibly Unit III/III-B in order to flatten and transform parts of the site. The remains of LIP occupation in these areas, if originally present, may have been victims to this landscaping effort.

Much as the near-abandonment of Minaspata ca. 600 CE seems to be related to the arrival of Wari colonies to the Lucre Basin, the reoccupation of the site at precisely the moment of Wari state collapse is unlikely to be a coincidence. The nature of the site’s abandonment is unclear, and the possibilities will be discussed more in the discussion section of this chapter below. However, what is more clear is that the groups who reoccupied Minaspata ca. 1000 CE - later referred to in ethnohistoric texts as the Muina (Chapter 3) - brought with them a cultural identity that at least partly referenced specific Wari symbols and material practices, which is evident most clearly in the Lucre ceramic style (Chapter 6; see below). The Muina seemed to have shared a cultural affinity with the Pinagua, the other major ethnic group located in the Lucre Basin during the LIP, and both sites contain an abundance of Wari-influenced Lucre style pottery. A smaller proportion of Killke style pottery has also been found at both sites (Dwyer 1971;

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20 Several of Dwyer’s units excavated in 1980-1981 also appear to show extensive Formative and EIP deposits reaching to the surface, with little evidence of later occupations. See below for discussion.
McEwan et al. 2002) (Chapter 6), and some Killke-style motifs and designs can be found on select Lucre style vessels (McEwan 1984b), however, indicating that the populations were continually interacting with the larger Cusco region.

Several monumental structures at Choquepukio also appear to intentionally reference Wari architecture at Pikillacta (McEwan et al. 2005, 1995, 2002); these types of structures do not appear to be readily identifiable at Minaspata, which may testify to either the relative importance of each site, or that the population at Minaspata felt less of a cultural affinity towards the Wari. Preservation may also play a role, as Minaspata seems to have been subjected to a greater degree of renovation during the Late Horizon than Minaspata. However, the outlines of some rectilinear or trapezoidal compounds, similar to the footprints of the monumental LIP structures at Choquepukio, can be identified using the satellite and aerial imagery of Minaspata - in particular, the area surrounding Unit II-Ext, where a majority of the intact LIP material was recovered during the 2013 excavations. These spaces (and elsewhere at Minaspata) were defined by large surface walls which have now collapsed, obscuring the foundations but creating thick rubble piles suggesting that the original walls would have been over a meter thick and up to a few meters in height. These walls, in their original state, may have more closely resembled the monumental structures at Choquepukio; however, further research is needed to determine if this is indeed the case.
Occupation Phases at Minaspata: Late Horizon

The Muina and Pinagua ethnic groups of the Lucre Basin, based at Minaspata and Choquepukio respectively, were apparently close allies united in their opposition to the growing Inca state threatening their sovereignty from the nearby Cusco Basin, 20-30 km to the west (Bauer and Covey 2002). Ethnohistoric chronicles suggest that the Lucre Basin polity was a competitor of the early Inca state, and that the final conquest of the Lucre Basin represented the final part of the Inca heartland to be integrated (Chapter 3). Evidence from Choquepukio suggests that this occurred ca. 1400-1430 CE, although it may have been slightly earlier (McEwan et al. 2005:266, 276). This integration into the Inca state would have had many significant and visible effects on the everyday lived experiences of the Muina and Pinagua. Inca constructions appear rapidly throughout the basin, including a major highway, roads, aqueducts and canals, terraces, and numerous Inca administrative buildings and sites. Inca style material culture flooded sites throughout the basin, changing local populations’ interactions with portable objects and the practices in which they would have been used. In addition, local populations would have been subject to the labor and taxation demands of the Inca state: groups from other areas may have been moved into the Lucre Basin, and at least some of the population at Choquepukio was involved in the production of Inca ceramics and textiles (Chapter 3).

The Inca conquest of the Lucre Basin seems to have resulted in drastic changes to Minaspata as well. Inca construction transformed large sections of the site: the area
around Unit I, for example, was cleared and transformed into a large Inca complex.\textsuperscript{21} The area around Unit III and III-B may also have been landscaped at this time, perhaps erasing some evidence of earlier occupations. New Inca constructions were also placed at Salteryoq in the southern sector of Minaspata, and isolated examples of Inca architecture can be located elsewhere on the site. Inca style material culture appears in large quantities in several areas, and is prevalent throughout the surface of the Minaspata.

The function of several areas also changed with the onset of Inca occupation. The area around Unit IV-Ext appears to have converted into an area primarily for trash deposition in the first half of the 15th century, which covered earlier LIP and EIP deposits and features. Inca style ceramics replaced the use of Lucre and Killke ceramics, although in Unit IV-Ext, many of the contexts near the surface contain mixed LIP and Inca material culture, and it is difficult to determine how quickly or abruptly this process occurred. A low terrace or revetment wall was constructed atop late LIP remains in Unit II-Ext, effectively erasing the material evidence of Muina cultural identity, and this area appears to have been converted into an activity space for craft production, with evidence of the production or finishing of Inca style ceramics, textiles, jewelry, and metals. At least some of the craftsmen working this area would likely have been drawn from the local population.

Associated with these Inca constructions and activity spaces was Feature R-101, consisting of a stone-lined pit about 2x2 meters in size and 40-50 cm deep, which was

\textsuperscript{21} This complex was likely ceremonial in nature; the Ministry of Cusco PRIA-Lucre project in 2014-2015 opened a large excavation unit in the lower section of this area below Unit I, revealing evidence of Inca religious rituals. This will be discussed in the next section below.
filled with dense quantities of broken ceramic vessels, ash, and faunal remains and
capped with a layer of large stones. A radiocarbon sample from this feature dated it to
1414-1463 CE. It seems to have been constructed, filled, burned and covered as part of a
single, intentional event, most likely associated with the beginning of Inca sovereignty
over the people of the Lucre Basin.

It is worth examining the details of this feature more closely to understand how
this was the case. The quantity of sherds far outweighed anything else recovered from the
interior of Feature R-101. A total of 495 diagnostic sherds and 2,415 non-diagnostic
sherds were recovered, and just over 30% showed evidence of burning, in some cases
obscuring the decorations on the surface of the vessel. Of the analyzed diagnostic sherds,
85.6% dated stylistically to the LIP, and 62.7% of these belonged to the Lucre style; \(^2\) of
the 44.4% of total diagnostic ceramics for which a vessel form could be determined,
46.8% were large, restricted vessels, most likely jars or pitchers. \(^2\) Some fragments were
able to be refitted to each other, indicating that multiple sherds from single vessels were
recovered, and many of these fragments were quite large, suggesting at least some may

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\(^2\) 18.5% of the LIP fragments in R-101 belonged to the Killke or Local Killke style, and the remaining
16.8% was classified as “Indeterminate LIP.” In addition, 1.2% of the total sample of R-101 diagnostic
ceramics was classified as Middle Horizon, and 2.9% were EIP; approximately 15.3% could not be
identified to style but could be assigned a time period, based on fabric and form characteristics. Only 5.9%
were Inca in style. A significant minority of sherds assigned to the Lucre style (21.8%) was stylistically
ambiguous but appears to have been Lucre style in form and paste composition, with chalky yellow-white
slip known from Lucre vessels, but decorated with Killke and Inca Provincial style designs. Following
McEwan (1984a, 1984b), these are classified as “Lucre A.”

\(^2\) 13.6% consisted of restricted bowls, and 39.0% were unrestricted vessels of various types. The remaining
1.3% were specialized forms, such lids and decorated spoons or ladles.
have been broken in place: the weight-to-count ratio of diagnostic ceramics from Feature R-101 was significantly higher than for the site average.\textsuperscript{24}

The distribution of faunal bone, although much lower in quantity than the ceramics, was also interestingly patterned: of a NISP of 31 diagnostic (partial or complete) faunal bones, 22 belonged to the skull (10), the podials or metapodials (8), or the cervical vertebrae (4) of an adult camelid (MNI = 1) – all body parts relatively low-value in meat quantity or quality.\textsuperscript{25} While this evidence alone cannot say much, the likelihood that most of these identifiable bones came from a single camelid, and the relative lack of high-value or meat-bearing elements, could suggest that that a single animal was consumed for this depositional event but the high-value body parts were consumed and deposited elsewhere.

If Feature R-101 is indeed associated with the early years or decades of Inca occupation in the Lucre Basin, the composition of ceramic sherds recovered from the feature needs some explanation. While a majority of the ceramics belonged to the Lucre and (to a lesser extent) Killke styles, a very small proportion (5.9\%) were identified as Inca. This composition conforms to expectations of what would be in use or circulation in the Lucre Basin a few decades after the Inca conquest of the area: predominantly Lucre in

\textsuperscript{24} The weight-to-count index is a ration of ceramic sherd weights to ceramic sherd counts recorded within each context of the excavation unit. A relatively higher weight-to-count index means that heavier and thus typically larger ceramic sherds were recovered from that context. The weight-to-count index for diagnostic ceramics from Feature R-101 was 51.59, one of the highest ratios from any context, and significantly higher than the average of 21.01. For non-diagnostic ceramics, the index was 23.18, and the average for all contexts was 12.38.

\textsuperscript{25} Other bones included three elements pertaining to \textit{Cavea porcellus} (domesticated guinea pig); one cervid metapodial; a full camelid tibia; fragments of a camelid innominate, humerus, and scapula; a large mammal sternebra; and a camelid thoracic vertebra. Indeterminate faunal bone fragments included large mammal fragments from the skull, vertebrae, carpals, and ribs and long bones.
style, but with small amounts of Killke or early Inca pottery obtained through exchange or interaction. The intentional breakage, burning, and burial of these ceramics - possibly accompanied by a small feasting event involving an adult alpaca or llama - seems to represent the ritual destruction of a key material component of local identity and sovereignty.

This type of ceremonial practice, representing at once a process of conversion of places and a statement of Inca political authority, has precedents elsewhere in the Cusco region. At Choquepukio, McEwan and colleagues report that the Inca filled a large pit in the center of a patio located in one of the LIP monumental structures with large quantities of broken vessels (including face-neck jars, ollas or cooking pots, plates, and cups). The pit was stratigraphically associated with the beginning of Inca occupation at Choquepukio, and the vessels consisted of Lucre and Killke style decorated vessels, along with smaller quantities of vessels in unidentified styles (2005:266–269).

A better documented (and larger scale) example of this practice comes from the site of W’ata, located northwest of Cusco near Ollantaytambo. W’ata was a long-occupied ancestral place, with a clearly visible pre-Inca history visible in the form of multiple tombs and accretions of structures (Kosiba 2012). A long-occupied elite residential area was converted to an Inca plaza through a multi-step process. Earlier structures were disassembled or toppled and interred beneath a layer of fill consisting of broken fine decorated pre-Inca pottery sherds, serving vessels in particular. Inca polychrome vessels were included in this fill, suggesting that select objects were interred in this space not because they were merely pre-Inca materials, but because they were
highly valued. These broken sherds were larger in size than were recovered from earlier phases, and many fragments came from single vessels, suggesting they were broken in place. Very little other artifacts were recovered from this fill. The next step in converting this space involved lighting a controlled fire in the plaza above the pre-Inca structures and alignments, covering the broken pottery with a layer of fine ash. A sharp increase in faunal bone densities associated with the ash level suggested that consumption activity co-occurred with the fire (ibid: 113-115). The plaza floor - made of gypsum and sandstone sediment - was placed above this ash layer, constituting the final step in the process of converting the pre-Inca plaza into the foundation of an Inca institutional space.

Similar processes of conversion were also performed at storage spaces and houses at W’ata. These processes, which targeted only particular buildings and areas which were the loci of important pre-Inca activity, were then covered and replaced by structures and spaces emblematic of Inca political authority. This process was not purely destructive, nor was it simply one of renovation: W’ata was extinguished and a new Inca place was inaugurated through a strategic and ritualized program of place conversion. In doing so, material spaces of past occupation were transformed and translated into an Inca idiom that put local peoples into their “correct” places (ibid: 121).

These ritualized practices bear a strong resemblance to the event which created Feature R-101, albeit on a much larger scale. Many of the other surface remains dating to the Inca occupation may also be interpreted as part of this process of conversion. However, this was not a process of wanton destruction; while evidence for localized fires appear in Unit IV-Ext and Unit II-Ext associated with the construction of new Inca
architecture, no evidence for site-wide burning was identified associated with this transition. Much like at W’ata, Minaspata was not demolished, but rather converted into an Inca place through processes of ritualized erasure and reconstruction.

Unpublished Excavations at Minaspata

While the 2013 excavation season provided a comprehensive view of the occupation history of Minaspata, the small amount of surface area exposed by these excavations may limit a complete understanding. To better understand the cultural sequence at Minaspata, it will be helpful to review the evidence from Edward Dwyer’s excavation project in 1980-1981 (1986), and the more recent Peruvian Ministry of Culture project in 2014-2015 (Quispe Serrano et al. 2016).

Excavations at Minaspata by Edward Dwyer, 1980-1981

Dwyer first excavated at Minaspata in 1969 as part of a larger dissertation project studying the emergence of Killke style pottery in the Cusco region (1971). Five small 2x2 meter test units were opened in different areas of the Western sector of Minaspata. Only one of these units was described in his dissertation, as it was the only unit which revealed evidence of Late Intermediate Period pottery styles (Chapter 3). However, Dwyer later stated that as part of these excavations, he was surprised to encounter stratified refuse extending down 3 meters in some areas, and a great quantity of Marcavalle style pottery dating to the Middle Formative Period (1986).
Dwyer returned to Minaspata from December 1980-March 1981, with lab work continuing into 1983. The results from these excavations unfortunately remain unpublished, but some were presented in 1986 at the Institute for Andean Studies annual conference in Berkeley, CA. His excavation and analysis notes, as well as some drawings and unit maps, were graciously provided to me in 2013, but the notes are partial and make reconstructing the actual excavation results difficult. Nonetheless, useful information about the cultural sequence of Minaspata can be gleaned from the combination of these resources.

The majority of Dwyer’s excavations in 1980-1981 focused on an area in the western part of Minaspata, on an open and mostly flat space that would have overlooked much of the northwestern sector of the site. Eight units ranging in size from 2x2 meters to 2x6 meters were placed in a cluster in this area, just north of a large pit, most likely a pre-Columbian quarry site. A larger excavation unit, 8 meters by 14 meters in size, was later placed next to these units to expose a set of building foundations near the surface. Two additional 2x2 meter units were placed about 10 meters apart about 95 meters to the south of the larger cluster of excavation units (rephrase), in a smaller space bounded by collapse surface walls, while a final 2x2 meter unit was placed 90 meters north of the original cluster, in the lower section of the Inca architectural complex (near where Unit I was located). The total surface area tested was just over 170 square meters, and the depth of excavation ranged from 3.3 meters (reaching sterile bedrock) in two smaller units to as little as 6 cm in the largest excavation unit.
The majority of archaeological evidence reported from these excavations seems to date to the Formative Period, with deep deposits of Marcavalle and Chanapata style pottery reaching to bedrock. Qotakalli style pottery generally overlaid these Formative period deposits, although in at least one unit, this phase extended to bedrock with no evidence of earlier occupation. In some cases, LIP and Middle Horizon ceramics overlaid these deposits close to the surface. No Inca pottery was reported to have been recovered.

Below ground architectural remains consisted of rectilinear walls and foundations, generally made of two parallel rows of rough stone with adobe clay mortar. Interior floors were of hard packed clay, and burials were found beneath the floors. Some Early Intermediate Period and Formative Period structures had square stone-lined hearths filled with fine powdered ash, and Dwyer postulated a ceremonial rather than domestic function for these hearths. He also encountered a series of circular pits, some of which were lined with stones. These were located outside of rooms and perhaps served as storage pits, which were later filled with trash.

Because of long occupation, continuous use, reuse, construction, and reconstruction, the chronological superposition of strata at Minaspata was difficult to untangle, and was often misleading when seen in small horizontal exposures. Dwyer

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26 Unit XIV, the solitary unit located north of the main excavation cluster.
27 Dwyer’s excavation notes indicate that these floors and burials mostly dated to the Formative Period, with one mention of a clay floor from an EIP context. This is consistent with the evidence from the 2013 excavations, particularly from Unit III-B, where several primary and secondary burials were found associated or just below a hard, reddish-brown clay surface extending over most of the unit.
28 These types of features were not identified during the 2013 excavations, but when I visited the open excavation units as part of the Ministry of Culture project in August 2015, I noted the presence of several features in different units that conform to this description. They seemed to be also associated with Formative Period contexts (for example, see Quispe Serrano et al. 2016:52–53)
explicitly acknowledged that he greatly underestimated the complexity of the site (1986). However, he was able to shed light on the chronological ordering of the ceramic sequence at Minaspata, with implications for the larger area, and his results have been largely confirmed by later research into the ceramic chronology of the Cuzco region.

Marcavalle style ceramics were deposited in the lowest levels, while Chanapata pottery clearly post-dated Marcavalle-style pottery (with a slight overlap). Qotakalli style pottery overlaid Chanapata pottery, representing a sharp stylistic and chronological break from earlier styles, but was mainly deposited below Middle Horizon styles. Killke and Lucre style ceramics were also clearly stratified above Qotakalli and Middle Horizon pottery, confirming a solidly Late Intermediate Period date for these styles.

Of particular interest to this project are the results of Dwyer’s 1980-1981 excavations as they relate to the Middle Horizon. The near absence of any activity dating to the Middle Horizon recovered from the 2013 excavation season stands in contrast to the results of Dwyer’s earlier excavations, which suggest that a small Middle Horizon component was identified in some units. This evidence presents three possibilities regarding the nature of Middle Horizon occupation at Minaspata. The first is the site was completely abandoned with the arrival of the Wari state to the Lucre Basin, either by choice or by force. The second is that the primary occupation areas at the site moved ca. 600 CE: the areas previously occupied during the EIP were abandoned and other parts of Minaspata were resettled during the Middle Horizon, and the 2013 excavation units simply missed those new areas by chance. This would create a false perception that the
site was abandoned. However, the units placed in 2013 covered a wide range of the site, representing distinct clusters of surface architecture, and this possibility seems unlikely.

The third is some combination of these: much of the population of Minaspata left the site, but a small group remained, either intermittently or in a much more restricted area with a smaller population. Examining the nature of Dwyer’s evidence for an occupation during Middle Horizon may help evaluate these possible interpretations.

Dwyer was able to identify and describe three distinct Middle Horizon ceramic styles at Minaspata, which he provisionally named Minaspata A, B, and C based on stratigraphy and stylistic markers, although no radiocarbon dates were taken to confirm this dating.

**Minaspata A:** this style represents a local development with some continuity to Qotakalli style. The decoration is rectilinear and geometric in a manner similar to Qotakalli style, but the basic paste and surface are different. Basic decoration is a creamy white and black over a deep red shiny surface. Narrow bowls with lug feet continue in this style as do other Qotakalli shapes – except for face neck jars.

**Minaspata B:** this style is a polychrome ware on a smooth shiny red surface. New elements consist of a distinct grey slip – generally in bands outlined in black – horizontal chevrons, and outlined white balls with black dots in the center. All design elements appear related to MH elements known from the central sierra and south coast, and appeared to be Wari-related. Incurving bowls
and straight-sided bowls are common and decoration occurs on flattened tops of rims; face-neck jars also occur in Minaspata B.

**Minaspata C:** this style is characterized by a waxy shiny surface, figurative elements, and considerable use of a thick creamy white slip. Some vessel shapes are quite different from the other Minaspata styles, including flaring cups and bowls with carinated rims. Minaspata C ceramics seem reminiscent of other MH styles known from the Altiplano region.

Dwyer suggests that while Minaspata A was a local development, Minaspata B represented a northern (possibly Wari-related) style, and Minaspata C was related to ceramics from Tiwanaku and other pottery styles from the Lake Titicaca Basin during the Middle Horizon. Minaspata B and C did not occur in abundance and did not seem to represent any significant intrusion of a foreign population; however, Dwyer argued that Minapsata A did occur in large enough quantities to have served as the exclusive prestige ware of a local population.

Although the descriptions given in Dwyer’s presentation are scarce, drawings included in Dwyer’s notes allowed a direct visual comparison of these styles. My 2013 excavations recovered a very few examples of an unusual ceramic which appears to match Dwyer’s Minaspata A, contrasting with Dwyer’s observation that this ceramic style occurs in higher quantities; the occurrence of this style may be spatially patterned across the site. Minaspata B seems to match well with a Wari-influenced ware which Bauer has defined as Muyu Roqo (1999, 2002; Bauer and Jones 2003). It may also be an actual Wari ware, but it is difficult to determine without direct examination of the
ceramics. The third style, Minaspata C, also appears to match with a style present at various sites throughout the Cuzco region which Bauer has defined as Muyu Orqo (ibid). Concurring with Dwyer’s hypothesis, Bauer observed that Muyu Orqo ceramics show decorative influences from the Lake Titicaca Basin styles, although he places the beginning of this style in the late Early Intermediate Period rather than exclusively belonging to the Middle Horizon.

However, the extent to which the recovery of these ceramics represents substantial Middle Horizon occupations is unclear. No quantities of any of these styles are clearly indicated in his notes or his presentation (1986). His notes contain a number of drawings of sherds pertaining to these three Middle Horizon styles, including 16 belonging to Minaspata A, 8 belonging to Minaspata B, and 10 belonging to Minaspata C. All of these drawings are of rim sherds, suggesting that Dwyer targeted particular sherds for illustration, and the actual number of sherds belonging to each style may be larger. There is no mention in his notes of the co-occurrence of later LIP styles in the same strata as these Middle Horizon styles, suggesting that they are unlikely to have been deposited as part of later occupations. Some of these do seem to be mixed with earlier Qotakalli style fragments, but this does not necessarily suggest that they actually represent occupation activity prior to 600 CE.
before or in the first decades of the Middle Horizon. Limited evidence to support this possibility is found in Dwyer’s notes, in which Qotakalli style ceramics appear stratigraphically above and below a supposed Middle Horizon level.\textsuperscript{30} The evidence here does not clearly indicate that a substantial occupation during the Middle Horizon was uncovered by Dwyer’s excavations, but it does appear likely that at least some activity occurred in this area after 600 CE.

**PRIA-Lucre, Cusco Ministry of Culture, 2014-2015**

Beginning in August 2014, the Ministry of Culture (Dirección Desconcentrada de Cultura - Cusco) commenced the *Programa de Investigación Arqueológica Ocupación Humana en la Sub Cuenca de Lucre* (abbreviated PRIA-Lucre). The project was focused primarily on identifying the nature the cultural phases of occupation in the Lucre Basin through excavations at Minaspata.\textsuperscript{31} Directed by Sabino Quispe Serrano and Daniel A. Cabrera Carillo and employing 15 professional archaeologists, the project continued for 22 months of excavation and concurrent laboratory analysis. Eight units were opened throughout the northwestern quadrant of Minaspata, ranging in size from 2x2 meters at the smallest to 10x10 at the largest, exposing a total area of 167 square meters. The excavations revealed complete stratigraphic sequences ranging from the Middle Formative Period to the Late Horizon, although no radiocarbon samples have been

\textsuperscript{30} From Dwyer’s excavation notes: “Unit II-IIa-IIb: Level C, Lucre; Level D, Qotakalli; Level E, MH [Middle Horizon]; Level F, G, and H, Qotakalli and local MH (including one Tiwanaku-like sherd); Level I, Qotakalli; Level J, Marcavalle/Chanapata.”

\textsuperscript{31} The project was designed and proposed by José Luis Tovar Cayo, José Víctor Gonzales Avendaño, and myself in the spring of 2014, although I was not involved in its execution.
analyzed thus far, and the evidence for Middle Horizon occupation is minimal at best (see below). Although the results of this project have been described elsewhere (Antezana Condori et al. 2015; Cabrera Carrillo 2015; Condori Castillo 2015; Gonzales Avendaño et al. 2015; Quispe Serrano et al. 2016; Quispe-Bustamante 2015; Suelli Montañez et al. 2015), I will briefly summarize the most relevant findings here.

Large deposits of Formative Period material were recovered from most of the units, with ample quantities of Marcavalle, Chanapata, and Chanapata Derived style ceramics noted. Although some scholars have argued for influences from the Altiplano region evident in these early Formative Period ceramic styles (i.e., Chávez 1985), the organization of space and architecture from these contexts at Minaspata seem to reflect a more local development (Quispe Serrano et al. 2016:422). The presence of obsidian - mostly in the form of debitage, preforms, and projectile points - reflect interregional exchange from the earliest phases of occupation. Thick strata of Qotakalli and other local styles of ceramics during the EIP overlay these deposits, associated with a variety of features and architecture, and at least 24 human burials (out of 29 total) date to the Formative or Early Intermediate Periods (ibid: 421-425).

Late Intermediate Period contexts are also reported from several units, but occupation during this period seems to be more limited than it was in earlier periods.32 However, some parts of the site were significantly transformed at the beginning of the Late Horizon, with the arrival of Inca colonialism. This is particularly evident from the

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32 The degree to which this is the case is difficult to ascertain: many examples of Lucre style ceramics are noted in the unit descriptions and ceramics inventory, but this phase is not explicitly discussed in the report summary itself
largest unit (Unit II), measuring 10x10 meters and placed in the large Inca architectural complex in the northwest of Minaspata.\textsuperscript{33} This excavation unit revealed a complex juxtaposition of Inca architecture which reused and modified earlier walls constructed during the Early Intermediate Period. Many of these earlier deposits were sealed with intentionally constructed floors; three human burials (one of a child between 7 and 8 years of age) placed in small pits and showing evidence of cremation were also recovered, and offerings of Inca ceramics and anthropomorphic and zoomorphic (camelid) figurines made of \textit{Spondylus} shell and precious metals were deposited in associated contexts (Antezana Condori et al. 2015). The flanks of this depressed area were modified into small terraces or revetments. Evidence of occupation and possibly ritual activity dating to the Early Intermediate Period and Late Formative Period were located below the Inca structures and offerings. Several bronze and silver \textit{tupu} pins and decorated bone objects were also recovered. Objects related to ritual practice of a religious character pervade this space from several time periods, and the integration of earlier structures into Inca construction suggest that an intentional effort may have been made to preserve an ancestral memory of earlier occupations into a ceremonial space (Quispe Serrano et al. 2016:421–423).

However, the evidence for occupation during the Middle Horizon was weak, consisting only of a few ceramic fragments in disparate contexts and one example of a possible Wari-style burial cyst. This circular cyst (funerary context CF-15) was constructed by lining a 60 cm deep pit with semi-worked stones stacked in rows into a

\textsuperscript{33} Below the smaller plaza where Unit I was placed in 2013.
cylinder form, with an interior diameter of 58 cm and exterior diameter of 98 cm (Quispe Serrano et al. 2016:123). It contained the partial remains of four individuals, all secondary contexts in very poor condition with most of the postcranial bones pulverized by the soil overburden. No capstone over the cyst was identified. Although the excavators interpreted similarities between the form of this burial structure and Wari burial practices, the cyst is located in a stratum associated exclusively with Qotakalli style pottery, and is probably better interpreted as a unique example of an Early Intermediate Period burial. Given this interpretation, the more extensive excavations undertaken by the Ministry of Culture in 2014-2015 seem to confirm the results of the Minaspata Archaeological Project excavations in 2013, particularly with respect to the Middle Horizon: Minaspata seems to have been mostly, if not entirely abandoned during this period.

**Discussion and Conclusion**

The 2013 Minaspata Archaeological Project excavations revealed that Minaspata was a large site, probably a village, beginning in the Formative Period as early as 800 BCE. It participated actively in both regional interaction and long-distance exchange networks throughout this period. Beginning around 300 CE, the population expanded to occupy new areas of the site as new material culture (and possibly new burial practices), dominated by the new Qotakalli ceramic style, replaced earlier material. Smaller quantities of Waru and other local EIP ceramic styles accompany this transition, although these may have been phased out later, as they appear in smaller numbers in later EIP levels.
The Early Intermediate Period at Minaspata was characterized by active construction and renovation continuing until 600 CE. However, with the arrival of the Wari state to the Lucre Basin, Minaspata appears to have been abruptly abandoned, and at least one construction project appears to have been left incomplete. A small population may have remained in one small section on the western edge of Minaspata (Dwyer 1986), but the intensity and duration of this activity is ambiguous.

Some areas of the site were reoccupied in the early decades of the eleventh century. This new occupation phase, lasting until the Inca conquest of the Lucre Basin ca. 1400 CE, is characterized by multiple phases of construction and a material culture style which directly referenced Wari designs and motifs. Although the population of the Lucre Basin was apparently in an antagonistic relationship with the growing Inca state, the appearance of Killke ceramics (and Killke motifs on some Lucre style vessels) in later excavation levels suggest that Minaspata continued to interact with the larger Cusco region throughout this period.

The Inca conquest of the Lucre Basin resulted in drastic transformations to the architecture and activity spaces at Minaspata. Large sections of the site were cleared and modified to create flattened spaces, and Inca architecture appears at various places around the site. Evidence of LIP occupations were either destroyed and covered, or incorporated into new Inca structures and activity spaces, and a large complex was constructed and inaugurated with ceremonial offerings and burials in the northwest section of the site (Antezana Condori et al. 2015; Quispe Serrano et al. 2016). Valuable LIP vessels were intentionally destroyed, burned, and buried in a stone-lined pit as active
political statement of Inca sovereignty - one in which the newly conquered population was likely involved in to some degree. These transformations can be broadly understood as a process of ritualized and programmatic conversion, well-documented at other sites in the Cusco region such as W’ata (Kosiba 2012) and Choquepukio (Gibaja Oviedo et al. 2014; McEwan et al. 2005, 2002), which redefined Minaspata as a powerful Inca place and its people as subjects of Inca sovereignty. This new reality was probably reinforced through the imposed roles of the Muina as laborers and craftspeople co-opted to produce the materiality of Inca imperial domination.

A crucial question left unanswered by the archaeological evidence concerns the nature of the site’s abandonment at the beginning of the Middle Horizon, and who, exactly, made up the population which reoccupied Minaspata following the collapse of the Wari state. While a small group may have intermittently occupied the site for at least a part of the Middle Horizon, the abandonment appears to have been abrupt, and this might tentatively suggest that most or all of the population were forcibly relocated as part of a colonial project. The Wari state is unlikely to have annexed and controlled the entire Cusco region, as older models suggest was the case (Chapter 3), but they did transform the Lucre Basin and the Huarao Valley through architectural constructions on pre-existing sites (Gibaja Oviedo 2016), the establishment and continuing construction of massive colonies (Glowacki 2002; McEwan et al. 2005; Skidmore 2014), and the installation of large-scale infrastructure (Valencia Zegarra 1996, 2005). Much of the labor for these constructions was probably drawn at least in part from local populations, and whether it was coercive, economic, ideological, or some combination of all three, the Wari state
clearly had developed successful mechanisms for mobilizing colonized communities into providing labor and resources for state colonies and institutions. It is entirely possible that the population of Minaspata was forcibly relocated to labor camps near Pikillacta or even to Huaro for easier control. Alternatively, however, the abandonment may have been more due to local agency rather than state imperatives: Brian Bauer has suggested that at least some people in the Lucre Basin may have left as a reaction to excessive labor and taxation demands of the newly arrived Wari state, creating a small diaspora that distributed existing populations throughout the larger Cusco region outside of the direct control of Wari state colonies (personal comm. 2017; Bauer et al. 2019).

Similarly, were the people who reoccupied the site ca. 1000 CE descendants of the original population of Minaspata, descendants of the Wari settler population, or some combination of the two? Did the distinction even matter after 400 years of colonization? McEwan has suggested that the Pinagua ethnic group, based at Choquepukio during the Late Intermediate Period, may have been composed of the descendants of the Wari settler population in the Cusco region who moved to Choquepukio following the collapse of the Wari state (Hiltunen and McEwan 2004). This would explain their clear affinity for material culture referencing Wari state canons - an affinity shared, at least in part, by the Muina at Minaspata. However, this does not necessarily indicate that the Muina were also drawn from the Wari settlers, as local populations would be expected to adopt or appropriate particular aspects of Wari material culture over the course of 400 years of colonization, and some degree of intermarriage between Wari settlers and local populations would have likely occurred over this time. Furthermore, the descriptions of
the Pinagua and Muina as two separate ethnic groups in the Lucre Basin in the ethnohistoric chronicles itself suggests an important distinction in their origins. These issues will be further explored in Chapter 9.

Although some questions regarding the events during the Middle Horizon remain unanswered, it is nonetheless clear that the arrival of the Wari to the Lucre Basin and Huarco Valley significantly disrupted the sociocultural trajectory of Minaspata. In contrast to the rest of the Cusco region, which seems to have been affected relatively little by the presence of Wari colonies along the Vilcanota River, the reoccupation of Minaspata following the collapse of the Wari state was unique in the Cusco region for having been heavily affected by Wari colonialism. However, how the effects of this colonization in the Lucre Basin may have affected the assemblage of the Inca state remains to be explored.
CHAPTER 6

REGIONAL CERAMIC PATTERNS AT MINASPATA

Perhaps the most important source of archaeological data when examining prehistoric consumption patterns is pottery. Ubiquitous and durable, ceramics served a variety of mediating and enabling roles in a wide variety of social contexts, from domestic food preparation to elite ritual. As such, they are intimately tied to a community’s self-expression and identity through repetitive practice and embodied knowledge. Ceramics are particularly useful for examining regional and community group formation and maintenance because the plasticity of clay allows for a wide range of elaboration in shape and decoration, which can be used to consciously and unconsciously signal group identification; at the same time, ceramic production, distribution, and use is largely dependent on sociocultural factors while still limited to an extent by functional need and the physical realities of pyrotechnic technology.

Sensations of group affinity are based on the recognition, at a conscious and subconscious level, of similar habitual dispositions which are embodied in the cultural practices and social relations in which people are engaged. Such structural dispositions provide the basis for the perception of similarity and difference, leading to forms of self-reflexive cultural comparison (Jones 1997); as one example material culture distinctions are frequently maintained in a wide range of object categories to create in-group/out-group distinctions and justify between-group competition (e.g., Hodder 1982). This widespread and cross-cultural practice embraces not just ritual or elaborate decorative items, but includes mundane utilitarian objects as well, which are embedded in daily
habits and traditions of culturally-linked practices (what has sometimes been referred to as “isochrestic variation”) (Sackett 1986). A significant consequence which generally justifies archeology’s heavy reliance on consumption as an indicator of normative group identity, is that material culture contributes to the formulation of group identity even as it is structured by it.

And while fallacious to use material culture as a straightforward reflection of a group’s ethnic or political identity (pots are not people, as the well-worn mantra goes), we should still be able to approach similarities and differences in group identity on a broad scale using material culture – as long as we do so with the recognition that identification of group boundaries should not be confused with the understanding of the underlying processes creating, stabilizing, and eroding those boundaries. In other words, comparing the relative similarity of ceramics (and other material culture relating to consumption practices) recovered at Minaspata through time should allow us to identify the degree to which Minaspata and the Lucre Basin can be said to form a local or coherent community, and the degree to which this deviates or conforms to patterns in the larger region. In addition, the comparisons can help to identify ruptures or changes in the coherence of this group identity at particular moments in time, even if the sociocultural processes behind them can only be fully ascertained with additional research and theoretical interpretation.

Ceramic fragments or vessels can be analyzed in various dimensions to understand how ceramics reflect and contribute to consumption patterns at Minaspata through time. Similar decoration and surface treatment on an assemblage of pottery
distributed over a contiguous space, for example, can suggest corporate identity and
group cohesion of people inhabiting that space. This is particularly true when these
patterns can be demonstrated to have endured for longer periods. At a larger scale,
comparison of material culture assemblages within a region or across regions can help
indicate the degree of cultural cohesion or difference which different groups envisioned
and enacted. Vessel form, on the other hand, is more closely tied to the intended function
or use of the vessel, which is related to the perceived needs of the consuming person,
family, class, or community. As clay is a plastic material, parts of the vessel shape (such
as the rims) can be analytically useful for identifying culturally specific elaboration.
Similarly, while ceramic fabrics and production technology are more often associated
with production of the vessels and source of the clays, the technological choices involved
in producing ceramics are also related to the intended use, and technical requirements of
the vessel to adequately perform its intended use - characteristics which are closely
related to consumption.

However, while surface decorations and vessel elaboration can change rapidly
and for many different reasons (ranging from large-scale cultural change to shifts in
culturally aesthetic preferences), vessel form and production technology are more
constrained by the physical characteristics of clay as a material. The latter is also more
difficult to copy without direct access to the intimate knowledge embodied through
practice, experimentation, and learning. As a result, identifying similarities and
differences in ceramic production technology and vessel form across different cultural
and temporal contexts can provide information on interaction and regional community
formation on a different level than does the surface decoration and treatment. Finally, examining the frequency and distribution of these different attributes independently through time and space is necessary to identify changes - or continuities - in the way these objects are consumed and perceived.

Archaeologists in the Andes tend to rely predominantly on pottery “style” to organize ceramic analysis and position an archaeological site or context in time. While this method can be criticized and is problematic for pottery styles that represent long traditions with multiple phases, given the research objectives of this chapter, organizing the ceramic data from Minaspata according to style within time periods will provide the best potential for regional comparison (Figure 6.1). The objective in this section is not to produce a complete and detailed comparison of ceramics from all time periods across the region, which is beyond the scope and resources of this dissertation; instead, I present a broader-scale comparison between the decoration, form, and fabric of different ceramic styles across the Cusco region, while noting differences and variations in decoration or style at Minaspata where they can be identified. A full description of the analysis methodology appears in Chapter 4.

**Ceramics at Minaspata**

As described in Chapter 4, ceramic fragments from Minaspata were collected, cleaned, and inventoried before analysis. As part of this process, the sherds were separated into three categories: General Non-Diagnostic Artifacts (GE), which was composed of undecorated body fragments that could not be identified to style, time
period, or form; General Diagnostic Artifacts (GE Diagnostic), which may have been identifiable to time period and/or style, but the fragments were generally too small or partial to justify further analysis; and Special Artifacts (AE) which were designated for further analysis. This latter category included body sherds that could be identified to style or period and had some attribute that justified further analysis (such as decoration or other vessel elaboration), and all rim, base, and handle fragments, regardless of decoration.

A total of 88,512 individual ceramic fragments were recovered from excavated contexts. 64,623 sherds were assigned as GE and an additional 16,235 to GE Diagnostic (for a total of 80,858); these fragments were counted, weighed, and bagged according to context but were not analyzed further. The AE category contained 7,654 fragments, but due to limitations in time and resources, only 3,989 were fully analyzed. These analyzed AE sherds included 1,430 rim fragments and 383 base fragments over all excavated contexts.

Due to the research objectives, analysis focused on ceramics from contexts dating to the Early Intermediate Period, the Middle Horizon, the Late Intermediate Period, and the Late Horizon. Only about 16.2% of the ceramics from Formative Period contexts were fully analyzed, while totals from the EIP and LIP/LH contexts reached 66.7% and 71.72% of recovered sherds analyzed, respectively (Figure 6.1; Table 6.1).
Figure 6.1. Chronology of ceramic styles in Cusco region.
<table>
<thead>
<tr>
<th>Period</th>
<th>Total for Period</th>
<th>Style</th>
<th>Total by Style</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formative</td>
<td>215</td>
<td>Marcavalle</td>
<td>10</td>
</tr>
<tr>
<td>% Total</td>
<td>5.32%</td>
<td>Chanapata</td>
<td>62</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Derived Chanapata</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Formative</td>
<td>121</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unknown/Plainware</td>
<td></td>
</tr>
<tr>
<td>EIP</td>
<td>1318</td>
<td>Qotakalli</td>
<td>844</td>
</tr>
<tr>
<td>% Total</td>
<td>32.60%</td>
<td>Ak'awillay</td>
<td>110</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Waru</td>
<td>112</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Muyu Orco</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tiwanaku Incised</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EIP Unknown/Plainware</td>
<td>222</td>
</tr>
<tr>
<td>Middle Horizon</td>
<td>137</td>
<td>Wari</td>
<td>21</td>
</tr>
<tr>
<td>% Total</td>
<td>3.39%</td>
<td>Muyu Roqo</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Araway</td>
<td>58</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MH Unknown</td>
<td>28</td>
</tr>
<tr>
<td>LIP</td>
<td>1598</td>
<td>Lucre</td>
<td>857</td>
</tr>
<tr>
<td>% Total</td>
<td>39.53%</td>
<td>Killke</td>
<td>273</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Killke Local</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LIP Unknown/Plainware</td>
<td>414</td>
</tr>
<tr>
<td>Late Horizon</td>
<td>577</td>
<td>Inca</td>
<td>483</td>
</tr>
<tr>
<td>% Total</td>
<td>14.27%</td>
<td>Inca Provincial</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LH Unknown</td>
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<tr>
<td>TOTAL</td>
<td>3845</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identified to Style</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Indeterminate</td>
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<td></td>
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<tr>
<td>% Total</td>
<td>4.90%</td>
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</tr>
<tr>
<td>TOTAL ANALYZED</td>
<td>4043</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6.1: Total sherds analyzed by time period and style from Minaspata.
Formative Period Ceramics of the Cusco Region

Three Formative Period styles have been identified in the Cusco region, and used to define the different phases in the Formative Period by Bauer (Bauer 2002, 2004). The earliest well-described phase of pottery is the Marcavalle style, generally considered to be associated with the earliest pottery-using people in Cusco.¹¹⁰ Bauer associates Marcavalle style pottery with the Middle Formative Phase (1500-500 BCE), and based on published radiocarbon dates associated with this style of pottery from the sites of Marcavalle and Chanapata, suggests that the production of Marcavalle ceramics may have begun as early as 1250 BCE and continued until about 500-400 BCE (2004:40; see also Covey 2014e:12).

Marcavalle Style Pottery. The largest and most detailed study of Marcavalle pottery that has been published to date was directed by Karen Mohr-Chávez from 1966-68 (Chávez 1977, 1980, 1981a, 1981b). Based on an extensive attribute study, Mohr-Chávez defined the Marcavalle ceramic style, describing 10 major vessel forms (cooking pots known as ollas, bowls, square bowls, jars, shallow bowls, carinated bowls, spouted bottles, oval bowls, incurved bowls, and double bowls) and divided Marcavalle collections into four stylistic phases (A through D). She also identified 8 distinct surface finishes and numerous decorative techniques including paint (cream on brown, black on cream, and dark red on cream), specular hematite coloring, punctations, grooves,

¹¹⁰ Bauer (2004:39–40) has identified a poorly made, sand-tempered pottery that may predate Marcavalle pottery in the Cusco region, but this is based on stylistic and technological comparison rather than stratigraphically secure excavations or radiocarbon dates.
incisions, fillets, pattern burnishing, and zoomorphic appliques.\footnote{Zapata (1998:309) also reports black-on-brown painted Formative Period pottery from the site of Batan Urco, predominantly corresponding to Phase D Marcavalle style ceramics.} Sixteen different paste types were also described by Mohr-Chávez (1977) but the most predominant ones include substantial quantities of white non-plastic inclusions, most likely quartz and feldspars, which vary greatly in size.

Apart from Mohr-Chávez’s detailed analysis from her work at the site of Marcavalle, further descriptions or reports of Marcavalle style ceramics are rare, and detailed drawings and photographs of established examples even more so. Furthermore, Marcavalle style ceramics share many attributes and similarities with the later (but possibly overlapping) Chanapata style, and identifying Middle Formative phase occupations based on ceramics is difficult in surface collections. Additional research needs to be done before further insight into Middle Formative Period ceramics can be gained.

\textit{Chanapata Style Pottery}. Chanapata style ceramics were first identified by Rowe (1944:10–19) during his early research in Cusco. Radiocarbon dates suggest that the production of Chanapata style pottery begins around 750 BCE and continues until the beginning of the Early Intermediate Period ca. 300 CE (Bauer 1999:125, 2004:42; Covey 2014e:12; Davis 2010:161; Zapata 1998:311). This pottery style includes blackware and redware, although the latter includes pottery that is reddish to brownish in color (Rowe 1944). The surface treatment of Chanapata style ceramics includes smoothing and burnishing, both over the entire surface and in patterns on the interior of open vessels and exterior of restricted vessels, usually in the form of a thick, shiny band around the rim.
and vertical lines descending down the body (Davis 2010:77–78; Rowe 1944). Fine-line incisions are also common designs and generally form simple straight-line geometric patterns, although some cases of curved lines have been found (Bauer 1999:124; Rowe 1944:16). Punctations around the base of the neck or around the bulge of globular bodies are also common, and painted decorations (in geometric designs, especially zigzags and circles, and in abstract zoomorphic forms) in white-cream, red, or sparkling gray (probably made from hematite) are also frequent on redware and blackware, particularly on the exterior of restricted vessels and around the interior rim of open vessels. Incisions or burnished sections are sometimes used to delineate painted sections. Finally, molded decorations (especially of abstract zoomorphic and anthropomorphic heads, body parts such as crossed hands, or abstract designs included a linear “braided” band across the exterior surface of restricted vessels) applied to the rim or the body of different substyles are also frequently reported (Davis 2010:77–78).

The bulk of Chanapata style cooking ware consisted mainly of more or less globular cooking pots known as ollas, while more finely made pottery is mostly plate and bowl shapes (Rowe 1944:15). Ollas (and other kinds of restricted vessels) appear with and without necks, although no necks with sharply flaring angles were recovered at the site of Yuthu (Davis 2010:77–78). At Marcavalle, these ollas included two lateral handles, while some bowls included straight oblique walls. Small jars or pitchers with lateral handles include those with globular necks, or other times with longer tubular necks similar to the form of a bottle, have been reported, as have small cups or hand-size bowls (Pilco Vargas 2015:73), although the details of these latter vessel forms have not been as
well documented. Most neckless ollas and open plates in the Chanapata style have a characteristic thickened rim, created by folding the clay over and smoothing the seam. This takes the form of thickened rims on enclosed vessels and thick beveled, flattened or elongated rims on open bowls and plates (Bauer 1999:124).

*Chanapata Derived Style Pottery.* Continued research by Rowe in the Cusco region identified several Chanapata sites that contained a greater frequency of fine redware than black ware. These findings caused Rowe to review his data from Chanapata, and he found a decrease in the frequency of polished black wares through time, in comparison to a proportional increase in red wares. Rowe concluded that sites with red-fired ware only (lacking the polished black wares of earlier Chanapata style) are later than the main occupation at the site of Chanapata. He gave the name “Derived Chanapata” to this later phase of redware (1956b:143).112 Reviewing radiocarbon dates associated with Chanapata Derived redware, Bauer suggests that production began a few centuries after Chanapata style blackware varieties, perhaps 500-300 BCE, and continued in use for several centuries (2004). Bélisle notes that Chanapata Derived has typically been used as a diagnostic style limited to the Late Formative Period, but continues to be used alongside Qotakalli style ceramics as a domestic ware until the beginning of the Middle Horizon at the site of Ak’awillay, northwest of Cusco (2011). This may be an exception, however – Qotakalli and other EIP style ceramics seem to rapidly replace

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112 Although unclear from the text whether Rowe meant this Chanapata Derived designation to replace his earlier substyle designation of Chanapata Redware (1944:16–18), but this does seem to be the case (see also Davis, 2010: 76).
Chanapata and Chanapata Derived ceramics at most sites ca. 300 CE, as they do at Minaspata.

Other than the surface and paste color and chronological relationship, however, there seems to be few substantial attributes separating Chanapata from Chanapata Derived style ceramics. Most Chanapata Derived pottery fires to a brown, reddish brown, or red color. The most common decorative techniques at Ak’awillay include pattern burnishing, in which thin burnished lines on a smoothed surface created parallel or perpendicular linear patterns, and the use of polished red slip, most commonly on the interior surface of bowls and sometimes in combination with pattern burnishing (Bélisle 2011). Incisions and punctuations, particularly on the exterior body of jars and bowls, formed motifs including straight and zigzagging lines, chevrons, steps, circles, and plants. Painted motifs on a polished surface have also been noted in the form of parallel and zigzagging lines, circles with or without a dot inside, crosses and/or flowers, and an abstract animal, most likely a camelid.

Vessel forms are similar to those of Chanapata style ceramics as well (Bauer 1999:124); these include straight-sided flaring bowls with a thickened rim, and occasionally with a vertical flat handle attached to the lip; straight bowls, with vertically-oriented walls; smaller bowls with a short flaring neck and vertical concave vessel walls; and in-curving or restricted bowls. These bowls are large in size: flaring bowls and straight bowls had an average rim diameter of 24 cm at the site of Ak’awillay, whereas necked bowls and in-curving bowls averaged around 14-15 cm (Bélisle 2011). Globular cooking vessels with a concave form and a straight or flaring neck, known as ollas, were
also common, some with flat handles. Jars and/or pitchers with a long, straight or slightly 
flaring neck have also been identified in different contexts. Nearly all rims showed 
thickened lips, with the exception of some jars which showed rounded or flattened lips. 
Lids and shallow plates have also been noted from Ak’awillay but appear to form a small 
proportion of the collection.

While this description appears to paint a straightforward sequence of related 
pottery styles sequentially replacing each other throughout the Formative Period, the 
reality is slightly more complicated. Marcavalle and Chanapata style ceramics cannot 
always be easily distinguished from each other on the basis of rim shape, decorative 
technique or firing pattern (Bauer 1992, 2004; Covey 2014e:66). Similarly, the difference 
between Chanapata and Chanapata Derived phases seems to be determined primarily by 
the proportion of black wares to red wares, which is not particularly useful for 
archeological sites containing both components. Formative Period ceramics appear to 
change over time through at least three distinct phases, but not in a way that affords the 
delineation of strict chronological boundaries, limiting their usefulness as ceramic styles 
for the purpose of analysis.

Furthermore, Bauer reports that Formative Period ceramics collected from the 
Paruro region appear to be share similarities with Derived Chanapata ceramics, but they 
are not identical to those found in the Cusco Valley and should be classified separately 
(1999). While Formative Period ceramics in the Cusco region are recognizable as a whole 
and do appear to share some common attributes that distinguish them from later styles, 
the degree to which these styles may vary regionally has not been well-studied. As a
result of these stylistic issues, I have elected to discuss the Formative Period ceramics from Minaspata as a whole, rather than as three distinct styles.

**Formative Period Ceramics from Minaspata**

Formative Period components appear to have been widespread across the site, appearing in Unit I, II, III and III-B, and to a lesser extent, Unit V. However, these components were generally compressed close to the bedrock, and relatively few ceramics from this period were recovered during the 2013 Minaspata excavations. Dwyer also reported a substantial Formative Period component (Dwyer 1971a, 1971b, 1986), and extensive Formative Period ceramics were also recovered during the 2015-2016 project conducted by the Cusco Ministry of Culture (Quispe Serrano et al. 2016; Quispe-Bustamante 2015).

A total of 215 Formative Period ceramics were analyzed as part of this project, composing 5.39% of the analyzed ceramic assemblage. Unit I contained the best stratigraphic profile of Formative Period components, with over a meter of stratified material, and a radiocarbon date of ca. 800 BCE was recovered from the lowest level above bedrock. In contrast, few ceramics from Unit III and III-B were diagnostic to style or form, although most still demonstrated attributes in paste, decoration and surface treatment that were characteristic of Formative Period pottery.

Examples of redware and blackware were present, although the majority of Formative Period sherds from Minaspata were undecorated brown fragments, often with a distinctive medium- or coarse-textured paste containing numerous white non-plastic
inclusions. Mica was also noted in the paste of many of the fragments. Sherds from this period were most often fired to a red (37.7%) or reddish brown (19.6%) color, although some diversity in fabric and surface color existed, and small quantities of sherds fired to black, dark gray, brown, light red, and yellowish-red were also noted. Sherds identified as Chanapata style were most often red, reddish brown, or brown, while the vast majority of Chanapata Derived style was indeed red or reddish-orange. Only 33.5% of all Formative Period fragments were fired in a fully oxidized environment (the smallest percentage of any time period), while 12.1% were fully reduced and an additional 18% were partly reduced to a brown or dark brown fabric; the remaining 36.3% were apparently fired in an environment with poorly-controlled airflow or atmospheric conditions that changed during the firing. In addition, 40% of these fragments showed evidence of fire-clouding, suggesting a relatively poor grasp over firing conditions.

While the relative paucity of diagnostic rim fragments from Formative Period contexts make any analysis of vessel form tentative, some observations can be made. Jars, incurving bowls, and cooking pots made up the majority of the restricted vessels. While no pitchers were identified, some larger jars appeared to be globular in form with long, curved and slightly flaring necks, sometimes ending in a direct rim but often with rounded thickening on the exterior of the rim. Rim diameters were evenly spread between 6 cm and 26 cm, with a small cluster of rims between 10 and 14 cm.

Most restricted vessels were composed of large-mouthed incurving bowls and ollas. The latter were most common, with rim diameters ranging evenly from 11-16 cm, with a few examples of vessels over 20 cm. Cooking pots with handles or lightly curved,
everted rims had similar sizes, with rim diameters clustering around 10-17 cm and 20-29 cm, suggesting to distinct size classes of these vessels. These incurving bowls and cooking pots often had rims that thickened gradually until the lip.

Open vessels were more common than restricted vessels, and are predominantly composed of open bowls with vertical or slightly everted straight walls; these vessels had rim diameters ranging mainly between 12 and 19 cm, but several larger bowls were identified, including two Marcavalle style open bowls with diameters of 29 and 35 cm. Open curved bowls with flat bottoms were also present, ranging between 10 and 18 cm in rim diameter but centered on the average of 15 cm. These open vessel sizes are similar to those reported from Ak’awillay. Four possible drinking vessels also were noted, ranging in rim diameter between 7 and 11 cm. Large open plates were absent.

Surface treatment and decoration was also consistent with published results from elsewhere in the Cusco region. Many surfaces were polished or burnished, and incisions were common, especially along the rim or across the surface of larger vessels. Incised motifs included geometric designs and parallel thin or medium lines on the exteriors of most vessels. Some pattern-burnishing was also identified, usually in the interior of areas marked off by incisions; burnish marks were usually still visible on the surfaces. Painted vessels were relatively rare, but almost always occurred on redware vessels (possibly Chanapata Derived style), and usually in conjunction with incisions or pattern-burnishing (Figure 6.2).

Overall, Formative Period pottery at Minaspata seems to be consistent with that described elsewhere in the Cusco region, in decoration, fabric, and vessel form. Although
a more restricted set of vessel forms and decorative techniques appears at Minaspata, this is probably due to the small number of sherds analyzed, rather than reflecting the full corpus of pottery present at the site. While a number of restricted jars (ostensibly for storing liquids) were recovered, the absence of pitchers and the small number of drinking vessels suggests that the act of serving and consuming drinks in special contexts was not a regular occurrence at this time. The fact that most bowls were curved or had vertical and slightly everted straight sides suggests a concern with containment, perhaps of thick liquid-based foods or boiled vegetables and grains. In addition, the juxtaposition of small and medium-sized bowls with a few large open vessels indicates that food may have been consumed in smaller communal groups, perhaps structured along kin lines, eaten communally out of the same vessels or served out of larger vessels into smaller ones for individual portions.
Figure 6.2. Formative Period pottery fragments from Minaspata.
Early Intermediate Period Ceramics of the Cusco Region

The Early Intermediate Period in the Cusco region is marked by a series of significant transformations in material culture, economic activities, and settlement organization. The most noticeable change is the rapid transition from Chanapata and Chanapata Derived ceramics to an entirely new set of pottery styles. The most prevalent and best described to date is the Qotakalli style, which appears at many sites at the beginning of the EIP. Two other local styles, Waru and (more recently) Ak’awillay, have also been identified; these latter two styles are not as prevalent and have just begun to be thoroughly described. In addition, the two additional styles with apparent affinities to the Lake Titicaca region appear in small quantities at a variety of sites.

Qotakalli Style Pottery. Qotakalli style ceramics represent a marked difference in decoration, paste technology, and vessel form from earlier Formative Period pottery. This style was first identified by Lyon and Rowe (1978), with fuller descriptions later provided by other scholars (Bauer 1999, 2004; Bauer and Jones 2003; Glowacki 1996; Barreda Murillo 1982). The origins of this regional style are unclear, but excavations throughout the Cusco region suggest that a rapid transformation occurred in local ceramic production ca. 300-400 CE. Qotakalli style ceramics continue to be produced throughout most, if not all, of the Middle Horizon throughout the Cusco region, which creates some problems for chronology. Nonetheless, it remains the dominant pottery ware in use during Wari occupation, and even appears in very small amounts at the Wari sites of Pikillacta (Glowacki 1996), Huaro (Skidmore 2014), and in Wari tombs at Batan Urco (Zapata 1997).
Qotakalli style vessels are generally described as covered with a cream or white slip and are well-burnished, with geometric designs painted in red and black; the fabric is fine and contains small white and gray quartz, with other dark red clay or rock, mica, and green diorite inclusions. These finer vessels are generally fired to a light orange, cream, or pink paste (Glowacki 1996:210). At times, Qotakalli-style designs are more roughly painted on unslipped vessels that tend to be coarser and larger in size, or with a self-slip that matches the buff or pink fabric color (i.e., Bélisle 2011). Whether this distinction is due to different intended usage, local vs. imported production, or some other factor is unclear.  

Decoration consists of black, black-and-red, or (more rarely) red geometric and linear motifs painted on a cream or buff background. The surfaces are smoothed and sometimes lightly burnished, but other times left matte. The variety of geometric decorations was limited to straight, zig-zagging, and undulating parallel lines, diamonds, triangles, and dots. Bands of cross-hatched or nested diamonds are common as well. In red-and-black painted vessels, these lines frequently alternate between sets of red and black. Four main stylistic variations have been identified: (a) coarse- to average-quality ware decorated in black on an orange background; (b) fine-quality ware decorated in black and red on an orange background; (c) coarse- to average- and fine-quality wares decorated in black on a cream background; and (d) coarse- to average- and fine-quality wares decorated in black and red on a cream background (Bauer 1999:70; Glowacki 1996:210; Bélisle 2011).

Bélisle originally argued that this distinction at the site of Ak’awillay represented locally produced Qotakalli style imitations, while the finer wares were imported from the Cusco Basin (2011); however, she has since reconsidered this division (pers. comm., 2019).
Monochrome and bichrome wares on a cream background are more common than the orange variants by far (Bauer 2004:48). In general, the red-and-black decorated vessels tend to be of higher quality. At times, red paint can appear brown due to careless firing.

Qotakalli style vessel forms generally include bowls, deep dishes, and flat-bottom pitchers with round bodies and straight necks (Bauer 1999; Lyon and Rowe 1978). The bowls include those possessing straight and curved diverging sides, closed incurving bowls, open vessels with straight vertical and slightly diverging sides, likely small bowls or tumblers; vessels with rounded gourd-shaped bases; and jars with straight and flaring diverging necks (Glowacki 1996:213). Perhaps the most distinct vessel form is a steep-sided, tripodal bowl with small legs that vary in length from 1-3 cm. The base of these bowls is rounded and the sides are slightly everted, although similar forms with a flat base have been reported (Bauer 1999:72).

Most vessels have thin walls and direct rims with rounded lips, which tend to narrow slightly towards the lip. Vessel sizes tend to be small with no evidence for plates or wide, shallow bowls. At the site of Ak’awillay, Qotakalli style straight-neck jars had rim diameters ranging from 3 to 15 cm, while the different bowl forms combined had average rim diameters between 11 and 12 cm (Bélisle 2011).

Waru Style Pottery. Waru is the name given to a ceramic style first identified by Rowe (1944:19–20) as “Carmenca Red on White,” and was placed later in the sequence than the Chanapata style based on stylistic considerations. Later, the name Waru was given by Manuel Chavez who encountered this style during early excavations at the site.
of Batan Urco in the early 1950s (Rowe 1956b), although this collection was later lost. More recently, Zapata (1998) has identified it at Batan Urco during the EIP; this dating has been confirmed by Bélisle at Ak’awillay, where production began in the EIP and continued into the early Middle Horizon (2011). Waru style ceramics have also been recovered from surface collections at sites in the Xaquixaguana Plain northwest of Cusco (Covey 2014e) and in the Paruro region (Bauer 1999). However, this style has not been well published and seems to appear in most EIP contexts in relatively small numbers compared to the Qotakalli style.

Waru style pottery is described as having a light orange, orange, or light brown paste, although fire clouding was common at Minaspata, and some vessels were fired in a reducing atmosphere to a dark gray surface. Decoration consists of simple motifs painted in a medium or thick brush on a natural or self-slipped surface in red or brown paint; these motifs include parallel straight, curved, or undulating lines, and straight or curved lines with short perpendicular or slightly angled dashes. Occasional dots, chevrons, and small hooked lines have also been noted. Decorations appear on the interior of bowls in most cases.

Although jars have been reported from the sites of Chanapata (Rowe 1944) and Ak’awillay (Bélisle 2011; Bélisle and Quispe-Bustamante 2017) in small numbers, the vast majority of Waru style vessels appear to consist of incurving bowls with round bases. These bowls tend to be small and would be appropriate for a single person. These bowls have a thinned or rounded lip, with an average rim diameter of 11 cm at
Ak’awillay (ibid). Straight-sided flaring bowls of a similar size are also reported in small numbers.

*Ak’awillay Style Pottery.* In addition to Qotakalli and Waru style ceramics, a third related ware appears throughout EIP contexts at Minaspata. This style was first identified at the site of Ak’awillay in contexts dating to the EIP, where its use continued during the Middle Horizon (Bélisle 2011). Bélisle and Quispe-Bustamante have recently described this pottery as a distinct style called “Ak’awillay” (2017), where it composes roughly half of the overall identifiable ceramic assemblage in EIP contexts (Bélisle, pers. comm. 2019). The presence at this pottery at both Minaspata (see also Gonzales Avendaño et al. 2015) and Ak’awillay, located over 50 km apart, suggests that the style is not “local” to either site, but may be present at more sites with EIP components across the Cusco region. It may have gone unreported elsewhere for a variety of reasons.114

The Ak’awillay style recovered from its type-site was made of a predominantly oxidized paste firing to light orange, orange, or brown paste; less frequently, the paste was cream, pink, or gray. The size of inclusions were highly variable, and three distinct pastes were identified: one contained ample quantities of white inclusions, probably quartz and feldspars, mixed with a smaller number of crushed black stone; a second type

114 The radiocarbon dates associated with Waru, Qotakalli, and Ak’awillay styles of pottery at the site of Ak’awillay are later than at Minaspata; whereas dates associated with these styles are from the early 5th- late 6th centuries CE, they tend to cluster around the 7th and 8th centuries at Ak’awillay. However, the radiocarbon dates come from two separate domestic contexts, one of which dates to the turn of the millennium and the other to the 7th/8th centuries (Bélisle 2011; Bélisle and Quispe-Bustamante 2017:571). Additional excavation of contexts dating to the early EIP at Ak’awillay probably would be associated with early examples of these ceramic styles.
much the same but that included reddish inclusions or crushed grog; and a third type that also contained mica (Bélisle and Quispe-Bustamante 2017:563).

Decoration generally consisted of simple motifs painted in dark brown or faded black, or reds on a natural background. These motifs included parallel straight or undulating lines, circles, dots, and similar intermediate designs. These motifs generally appeared on the interior and exterior surfaces of bowls and the necks of jars. Rare examples of these vessels were decorated with incisions, excisions, and appliques, generally occurring on the or around the necks of jars. Roughly a quarter of the vessels identified as jars were decorated with parallel straight lines, both diagonal and vertical, and parallel undulating lines. Paint tended to be applied with a relatively thick brush. A small number of jars identified at the site of Ak’awillay also contained molded appliques of “coffee-bean” eyes or partial faces on the necks, often accompanied by linear paint in black and red (2017:567, Figure 9.B).

The majority of Ak’awillay style vessels at this site consisted of bowls with a rounded lip and thin convex or straight walls; all bowls had small diameters, averaging 12-13 cm, most likely used for individual servings of food and drink. Jars and olla cooking vessels made up most the remainder of the vessel forms represented at the site of Ak’awillay. Jars had a long neck, slightly flaring or straight, that was concave or straight in form with an average diameter of 12-13 cm. A second class of jars, representing only 7% of those recovered, were larger, with a diameter of 22.6 cm (2017: 564). Both the interior and exterior walls were smoothed, although a few were burnished. Cooking pots were concave or straight in form, with a flaring, articulated neck and an average rim
diameter of 16 cm. These types of vessels were almost exclusively undecorated, and most had soot over the exterior surface, indicating their use over a fire. Plates, neckless cooking pots, and cups of this style were also recovered from the site of Ak’awillay in small numbers.

Bélisle and Quispe-Bustamante (2017) note that the Qotakalli, Waru, and Ak’awillay ceramic styles are related in terms of vessel size and shape, surface treatment, and fabric and production technology (if not decoration). They further argue that Ak’awillay and Waru style ceramics represent a kind of transitional or incipient development of the more frequent Qotakalli style ceramics (2017). However, while this suggests that Qotakalli pottery wares may have been subject to some local development, all three EIP styles are still markedly different in most dimensions from earlier Formative Period vessels, with drastically different fabric, surface treatment, decoration, vessel form, and general appearance. In comparison to the larger plates and bowls in Chanapata and Formative period ceramic styles, much of the assemblage of these three styles at the site of Ak’awillay (and elsewhere, for Qotakalli style ceramics) focuses on smaller bowls and cups, more suitable for serving liquids and foods to single individuals. While the nature of this social and material shift is unclear, the possibility of a large-scale immigration into the Cusco region ca. 300 CE which replaced or absorbed much of the local population remains a possibility (Brian Bauer, pers. comm. 2017) (Chapter 3).

*Muyu Orco Style Pottery.* In addition to these three regional wares, two other distinct pottery styles appear at a variety of sites throughout the Cusco region. These styles first seem to appear in the late EIP and continue into the early Middle Horizon, but
secure radiocarbon dates associated with these ceramics are rare. Both styles demonstrate similarities with those used in the Altiplano region and may record influence in the Cusco region from the early Tiwanaku state (Bauer 2004:50), which dominated the Lake Titicaca Basin area during the Middle Horizon. Evidence for early Cusco-Tiwanaku interactions has been suggested on several occasions, but has been proved unreliable after further research (Bauer 1999:85). While they do suggest similarities in form and design to those used by Pucara and Tiwanaku polities, these two ceramic styles are relatively rare at most sites but are distributed widely throughout in the Cusco region.

The Muyu Orco ceramic style, first identified by Bauer in the Province of Paruro south of the Cusco Basin in the late 1980s, is named after the site where they were most common in his survey (1992, 1999, 2002). Settlement survey projects throughout the Cusco region have identified Muyu Orco pottery in surface collections of 47 total archaeological sites (Covey et al. 2013:543). Although occurring at sites throughout the entire region, this style appears to be more concentrated in Paruro, the Cusco Valley, and the Xaquixaguana Plain.

Muyu Orco style pottery is a fine polychrome pottery style that may have been reserved for special occasions and ceremonies.¹¹⁵ This pottery style has a deep red, or less frequently, orange paste and surface, which served as a background on which other colors were applied. The paste contains non-plastic inclusions that range from very fine to medium in size ((Bauer 1999:78; Bélisle 2011). Muyu Orco style vessels were always

¹¹⁵ Excavations at the site of Muyu Orco (Zapata 1997) suggest that the site probably served a primarily ritual function, as Zapata uncovered the remains of what may have been a sunken temple, an eponymous architectural form associated with ritual from early times in the Altiplano region.
oxidized, although sometimes a gray core remained in the profile. Decorations consist of black, white, and orange pigments on a red background. The pigments are relatively thick, with little absorption into the vessel. Motifs are generally geometric, including straight parallel lines, zigzagging lines, bands of cross-hatched lines or stepped lines, circles, dots, and frets. One partial vessel recovered by Bauer (Bauer 1999:117) was a straight-sided q’ero\textsuperscript{116} drinking vessel featuring a “front-facing god motif” similar to those commonly depicted in Wari and Tiwanaku style imagery (i.e., Isbell and Knobloch 2009). The interior and exterior surfaces of Muyu Orco style ceramics are slipped in red and heavily burnished, and decoration always appeared on the exterior surface of vessels (Bélisle 2011). Relatively few recovered fragments of this style are large enough to suggest specific vessel forms, although some have been identified. These forms include small steep-sided bowls, annulated bowls, and straight-sided or slightly-flaring cups that were used for individual servings of food and drink (Bauer 1999; Bélisle 2011).

Bauer identified Muyu Orco ceramics as a Tiwanaku-related style based on two observations. First, the painted colors of black, white, and orange figures over a dark red background used in Muyu Orco style pottery are a hallmark of pottery from Tiwanaku and Pucara assemblages, though they are also found in Wari and Wari-related collections. Second, various vessel forms (such as annulated bowls) and vessel attributes (such as rim scallops and pedestal bases) are found in both Muyu Orco style ceramics and throughout the Altiplano region at this time, but are rarely present in Wari assemblages (Bauer

\textsuperscript{116}The q’ero term is used to describe a specific type of drinking cup or beaker: a tall cup with an undulating profile or an undulating band beneath the rim. The form is common in Wari and Tiwanaku ceramic assemblages, as well as later Inca assemblages.
1999:84, 2002). However, chemical analysis of Muyu Orco style fragments demonstrate a compositional pattern consistent with locally manufactured ceramics possibly produced in the Cusco Basin (Montoya et al. 2003:181).

*Incised Incensarios.* Altiplano influence on the Cusco region during the EIP is also recorded by the presence of incised ceramic *incensarios* at numerous sites. These vessels are annulated bowls that stand on pedestal bases, and appear to have been used as ceremonial incense burners (Chávez 1985). They are burnished and then deeply incised with dense geometric patterns. These types of vessels have been documented at sites between Cusco and Lake Titicaca (ibid), and those found in Cusco probably represented an early Tiwanaku state influence on the region; indeed, they appear to originate from the southern Titicaca Basin as part of the Qeya style dating approximately to AD 100-500 (Bauer and Stanish 2001:90–92; Stanish 2003:193) However, based on her study of the pastes, forms, and motifs of the vessels, Mohr-Chavez concluded that these fragments were not importations from Tiwanaku, but instead better reflect a stylistic influence that traveled northwest from the Lake Titicaca Region. Geochemical analysis also indicates that they were produced with local clays (Montoya et al. 2003). These ceramics have been documented at a small number of sites in surface collections and in small quantities recovered from excavations, spread throughout the Cusco region, including the Cusco Basin (Bauer 2004:51), at the site of Ak’awillay (Bélisle 2011), in the province of Paruro (Bauer 1999), and at the site of Batan Urco (Zapata 1998:313). A single radiocarbon date associated with a shattered incised *incensario* at the site of Peqokaypata returned a calibrated date of 530-700 (2-sigma, 95.4% CI) (Bauer and Jones 2003:57), which seems
consistent with their stratigraphic position in the few excavated contexts reported. The use of these vessels in the Cusco region is believed to have ended with the arrival of Wari influence (ibid).

The designs on incised *incensarios* tend to be geometric, although examples containing stylized puma head motifs have also been reported, as have incised puma heads modeled applications which were once attached to the vessels (Bauer and Jones 2003:57; Chávez 1985). The exterior of these vessels is lightly burnished, while the interiors have simply been smoothed. The faint remains of red and yellow post-firing pigments can still be seen in the grooves of a few examples, suggesting that the vessels were once painted post-firing. Although all published fragments recovered from the Cusco region are too small or fragmentary to identify the full vessel form, similar examples of these types of vessels recovered from the Lake Titicaca region are slightly flaring, straight-sided bowls atop a ring pedestal base, often with scalloped rims and a feline head applique attached to the rim (Chávez 1985:172–179 Figures 64-69). Evidence of burning on the interior of these vessels is visible, supporting their use as ceremonial burners.

**Early Intermediate Period Ceramics at Minaspata**

Ceramic styles dating to the EIP at Minaspata first appear in the early 4th century CE and continue until the site is largely abandoned ca. 600 CE. Fragments belonging to these pottery styles appear in all units except Unit I and Unit III-B, where they may have been removed as fill due to later renovation (perhaps during the Late Horizon) (Chapter
5). When the results of excavations directed by Dwyer (1986) and the Cusco Ministry of Culture in 2015-2016 (Quispe Serrano et al. 2016) are taken into account, the thickness of EIP deposits and their appearance at wide areas of Minaspata suggest that occupation increased or expanded to new areas of the site at the beginning of the EIP (Table 6.2).

All ceramic styles described above appeared in EIP deposits at Minaspata, but Qotakalli style fragments were by far the most prevalent, outnumbering Waru and Ak’awillay style sherds by an approximate ratio of 8 to 1, and composing roughly 60% of the overall assemblage of analyzed AE sherds throughout the period.

<table>
<thead>
<tr>
<th>Style</th>
<th>Early EIP/Late Formative</th>
<th>Early EIP</th>
<th>Mid EIP</th>
<th>Late EIP</th>
<th>Late EIP/MH</th>
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<tr>
<td>Formative Decorated</td>
<td>43 100.0%</td>
<td>10 23.3%</td>
<td>12 2.8%</td>
<td>8 1.8%</td>
<td>8 6.3%</td>
</tr>
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<td>Formative Plainware</td>
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<td>7 3.6%</td>
<td>11 2.6%</td>
<td>13 2.9%</td>
<td>3 2.4%</td>
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<td>123 62.8%</td>
<td>264 62.3%</td>
<td>231 51.4%</td>
<td>34 26.8%</td>
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<td>Ak’awillay</td>
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<td>13 6.6%</td>
<td>34 8.0%</td>
<td>22 4.9%</td>
<td>6 4.7%</td>
</tr>
<tr>
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</tr>
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<td>50 11.1%</td>
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<td>3 0.7%</td>
<td>16 12.6%</td>
</tr>
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<td>3 2.4%</td>
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<tr>
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<td>7 3.6%</td>
<td>24 5.7%</td>
<td>39 8.7%</td>
<td>2 1.6%</td>
</tr>
</tbody>
</table>

Table 6.2: Quantities and percentages of fragments of each style appearing in EIP contexts, divided by phase.
*Qotakalli Style Pottery.* All decorated Qotakalli substyles described previously (Bauer 1999:70; Glowacki 1996:211) were present at Minaspata, including those on cream-slipped and unslipped wares, decorated in black, red-and-black, or (rarely) red alone (Figure 6.3). However, these decorative substyles did not seem to correlate strongly with vessel form, with the exception that drinking vessels were much more likely to be higher-quality polychrome wares (red-and-black designs on a cream or very pale brown slip). Unrestricted vessels outnumbered restricted vessel forms 288 to 75; however, even this is misleading, as 49 of the analyzed restricted vessels consisted of slightly restricted incurving bowls, probably functionally indistinct from more open and vertical bowls. The few jars and pitchers identified generally had slightly everted, straight-sided or outcurving necks that mostly ended in a flaring rim articulation. These types of restricted vessels were relatively small in size, with rim diameters ranging from 5 to 16 cm but mostly concentrated between 10 and 12 cm.

Only two restricted bowls could by identified as cooking vessels by the presence of handles or an articulated rim; the rest were bowls with direct rims and incurving walls only slightly restricted at the top. These vessels were decorated in black or red-and-black painted designs, but never in red paint alone. They were also generally small, with rim diameters ranging between 7 and 18 cm, but with 70.5% falling between 8 and 12 cm in size.
Open bowls were similar in shape and size to restricted bowls, but with vertical or slightly everted vessel walls ending in direct or slightly narrowed rims, usually rounded at the lip (Figure 6.4). Straight-sided bowls were most common, and ranged in rim diameter between 7 and 21 cm, with 77% falling between 10 and 14 cm. Bowls with slightly curved walls were otherwise indistinguishable, with rim diameters ranging between 7 and 20 cm but centered around 8-14 cm. Bases of this vessel type, when recovered, were almost all rounded, and many had short legs a few cm long attached at the base. The rounded bowl would have likely rested on these legs in many, if not all,
cases. Wide shallow or deep plates were absent in the Qotakalli style fragments recovered from Minaspata.

Figure 6.4. Rim profiles of open Qotakalli style vessels from Minaspata.
Drinking vessels were the other major vessel form represented in the Qotakalli style assemblage at Minaspata; 30 tumbler rim fragments were recovered along with a small number of bases and identifiable body sherds. These were also generally small, with rim diameters ranging between 5 and 12 cm, and 21 of the 30 (70%) between 8 and 10 cm in diameter. Drinking vessels were more likely to be higher quality than other vessels, often decorated in red-and-black over a thicker cream-colored slip.

Overall, very few of these unrestricted vessels were large enough to potentially serve more than one individual, and undecorated vessels with Qotakalli style vessel forms and pastes were similar in size and frequency. The predominance of open vessels with more vertical or slightly everted walls suggest vessels oriented more towards the individual serving of liquid-based foods, such as stews, rather than roasted meats or dry foods. Cooking pots with rims and handles were rare (although probably undecorated and some larger vessels of this type may have gone unanalyzed as GE vessels, particularly if highly fragmented).

The decoration and surface treatment of Qotakalli style vessels at Minaspata is consistent with previously published descriptions: designs consisted of a range of geometric and rectilinear designs painted in black or red-and-black, with red paint occurring alone only on very rare examples. Motifs most commonly consisted of variations on sets of parallel straight, wavy, or zigzag lines, set horizontally on the exterior (and more rarely on the interior) of open and restricted bowls, and vertically on drinking vessels. Other common designs included triangles and rhombuses, dots, or bands of cross-hatched diamonds applied in thin- or medium-width strokes. Less common
decorations included checkerboard patterns applied in black paint, concentric triangles and rhombuses, dots or commas filling negative space, crenellated parallel lines, or thin solid bands with one straight side and one wavy side. Interestingly, bichrome decoration was infrequent at Minaspata until the mid to late EIP.

The decorations on these vessels were painted on a buff or light red surface if unslipped, or more frequently on a surface with a thinly-applied layer of very pale brown (51.9%), pale brown or light yellowish brown, or light brown (20%) slip. A small number of fragments were from vessels covered in a pale pink slip, but this color could be due to inconsistencies in firing conditions rather than a unique slip. Rarely, some vessels were treated with a thicker, creamier slip and decorated with red-and-black painted designs; this was more common on drinking vessels, which were often lightly burnished. This was a rare treatment generally reserved for the highest-quality vessels – Qotakalli style ceramics were rarely burnished or polished at Minaspata, and the majority was either smoothed (32.4%) or smoothed and slipped (58.1%).

Qotakalli ceramic fabrics were usually fired to a salmon pink or light red (46%), red (11.8%), or reddish-orange (17.3%) color. Most sherds were fully oxidized (61.1%), while only 5% were fully reduced with an additional 9% partly reduced to a brown fabric. Nearly a third (29.9%) showed evidence of fire clouding, slightly below the average for all EIP ceramics.

Orangeware vessels decorated in the Qotakalli style, as described by Glowacki (1996; see above), were also present at Minaspata, albeit in small quantities. These vessels were decorated on a fully oxidized, orange unslipped fabric, always with a black
or dark brown paint. Cream slip does appear on a few fragments, but it never covers the entire surface. While the few examples of this sub-style were usually too fragmentary to determine vessel form, one large fragment was recovered that appears to be an unusually shaped restricted bowl (Figure 6.5).

![Figure 6.5. Qotakalli Orange substyle incurving bowl recovered from Minaspata.](image)

Qotakalli style pottery was primarily a ware designed for serving individual portions of liquid-based foods such as stews. In addition, the number of decorated vessels designed purely for individual liquid consumption (cups and tumblers) significantly increased compared to the Formative Period. These types of vessels are traditionally interpreted as intended for the consumption of fermented drinks such as chicha. The data from Minaspata corresponds closely to that of Qotakalli components from other well-studied sites in the region, most notably the site of Ak’awillay.

**Waru Style Pottery.** With the exception of a number of large spoons or ladles, all Waru style vessels recovered at Minaspata were small incurving bowls (although a few
had lower halves that were curved with straighter, more vertical upper walls). The rim diameters ranged from 6 to 16 cm, but most were grouped between 10 and 14 cm. These vessels were primarily decorated on the interior in red or brown paint, and had rounded bases lacking in the small supports present on Qotakalli style bowls that would have held them upright. The small size of these vessels, combined with the rounded bases, suggests that they may have been intended to be kept in the hand during use, and the single vessel form represented in the Minaspata assemblage suggest that they were intended for a specific and limited uses.

Only 37% of Waru style vessels were fully oxidized, while 30.9% were fired in a fully reducing atmosphere. The rest were fired in a more variable atmosphere, alternating between oxidization and reduction. Surface and fabric color was generally restricted to shades of light red, orange, or light brown, although more fully reduced vessels often had gray-brown paste colors. In addition, 67% of these vessels showed evidence of fire clouding, a high percentage that suggests little care was placed in controlling the firing conditions of Waru style vessels.

Decoration included curvilinear designs executed in red or brown paint with medium or thin brush strokes (Figure 6.6). Motifs consisted of lines (often changing direction randomly), dots, and small dashes, commas, or hooks; these latter designs often were placed to fill negative space, or branch off of a central stem or line and repeated across the interior of the vessel. Wavy lines also occur, and some decorations resemble those used in incurving bowls of the Ak’awillay style. Waru style vessels at Minaspata
were occasionally self-slipped, but most fragments were roughly smoothed and decorated.

Ak’awillay Style Pottery. Ak’awillay style fragments were relatively rare at Minapsata, occurring at roughly the same amounts as Waru style pottery. Due to high degrees of fragmentation, comparing vessel forms to those at the site of Ak’awillay is difficult. While appearing in consistent, if low, quantities throughout the different phases of the EIP, Ak’awillay style fragments first appear in the earliest EIP contexts transitioning out of the Late Formative Period – alongside a small number of Waru style fragments and primarily underlying deposits containing high proportions of Qotakalli style pottery. Bélisle and Quispe-Bustamante (2017) hypothesized that Ak’awillay style pottery may have been a transitional ware between Late Formative Period and EIP

Figure 6.6. Waru style pottery fragments from Minaspata.
ceramics; the chronological and stratigraphic position of these earliest fragments support this hypothesis, but the quantities recovered are too few to sufficiently test this proposal.

Vessel forms appear to be similar to those represented in other local EIP styles. In contrast to patterns observed from the site of Ak’awillay, jars and pitchers were rare; only a small number of restricted jars or pitchers (n=7) were identified, and their form suggested globular vessels with a long, restricted and slightly flaring, everted neck ending in a direct rim. Restricted incurving bowls were the most common restricted vessel. While generally too fragmentary to determine the full shape of the vessel, these incurving bowls tended to be smaller than comparable forms in Qotakalli and Waru styles, with rim diameters ranging from 5 to 15 cm but mostly grouped between 8 and 11 cm. Unrestricted bowls had rim diameters ranging from 6 to 14, with the majority between 12 and 14; two larger shallow bowl/plate forms had diameters of 18 and 23. The ratio of restricted to unrestricted bowls was closer than in Qotakalli and Waru assemblages, with only 10 restricted bowls to 13 open bowls.

Ak’awillay style vessels tended to have a medium to coarse-textured paste, often platy and soft with large inclusions densely packed within the matrix. The majority of fragments showed fully oxidized paste (59.6%), with 15% reduced to a gray or brown color. When oxidized, the paste fired to a light red (46.4%), red (9.1%), or orange (21.8%) color, similar to the color range of Waru style fabrics.

Most vessels were roughly smoothed, and nearly half of the fragments were unevenly slipped on the exterior, with slightly less showing slip on the interior, in light brown or very pale brown (buff) colors, with smaller percentages sherds applied with
orange or pale red slip. Decorations included dark red or dark brown paint applied in thick brush strokes, including wavy lines (sometimes in parallel), widely cross-hatched lines, straight lines, circles, and various combinations. These designs are generally poorly executed in terms of quality or alignment/direction of the lines (Figure 6.7).

![Figure 6.7. Ak'awillay style pottery fragments from Minaspata.](image)

Given the limited range of vessel forms present and low proportion of Ak’awillay style vessels at Minaspata compared to their frequency at the type-site, where they make up roughly half of the EIP style vessels, these vessels probably were obtained primarily through regional interaction and used alongside other Waru and Qotakalli style vessels for similar functions, rather than being produced locally to fulfill a specific (i.e, domestic) role. However, the range of decorative techniques, designs, vessel forms and sizes, and to an extent, paste colors present in Waru and Ak’awillay style sherds indicate that some overlap exists in the definition of these two styles. While many distinctions support the separation of these two styles of ceramics, the similarities suggest they may be related.
Muyu Orco Style Pottery. At Minaspata, Muyu Orco pottery fragments are infrequent and appear for the first time in contexts dating stratigraphically to the Late EIP phase, supporting the hypothesis that these vessels appear primarily in the Late EIP and early MH in the broader Cusco region. Only a few vessel forms – mainly vertical or slightly everted, straight-sided drinking vessels – were represented, suggesting that this was a prestige ware used in a limited number of situations, most likely ritual or ceremonial in nature. These drinking vessels made up half of the identifiable Muyu Orco style sherds analyzed, and ranged in rim diameter between 6 and 11 cm. One small restricted bowl with a rim diameter of 13 cm was also identified.

Decorative techniques were significantly different from other wares during the EIP in the Cusco region (Figure 6.8). Although the fragmentary and rare nature of Muyu Orco style sherds recovered at Minaspata make the identification of full motifs impossible, partial designs conform to those reported in prior publications. Decorations generally consisted of polychrome paint applied on the exterior of the vessel in geometric and rectilinear designs, well-executed with fine-line brush strokes. Colors included bold black, off-white or cream (sometimes eroded from the surface), and yellow. Black bands were common and usually painted with yellow or off-white stripes applied on top. The exterior surfaces of most vessels were very smooth and highly polished. Surface color was almost always a bold brick red, and most vessels were fully slipped on both sides.117

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117 Due to the fragmentary nature of these vessels, distinguishing between fragments of Muyu Orco style sherds and Okros-style redware bowls and drinking vessels recovered from the site of Muyu Roqo (Bauer 1999:64–68; Bauer and Jones 2003) was at times challenging. The key differences are that the surface of vessels described from Muyu Roqo were more frequently matte or slightly polished, and gray paint was
Generally, the fabric of Muyu Orco style vessels was very fine, with small inclusions infrequently distributed throughout the paste. Firing technology was quite consistent (particularly compared to other EIP ceramic styles), and oxidized paste color was always red or light red. Interestingly, only 26.9% of sherds recovered were fully oxidized, and less than 10% was fired in a fully reducing atmosphere. Most vessels showed more complex atmospheric firing patterns, with one side of the vessel reduced and the other oxidized. The most common pattern was a reduced core visible in the profile with an oxidized interior and exterior closer to the vessel surfaces (30.8%). Only two fragments showed evidence of slight fire clouding.

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often applied in lines or bands to the surface of vessels, which is unknown on Muyu Orco style fragments from Minaspata.
Although the quantities recovered and analyzed at Minaspata are too small to draw any firm conclusions, the surface treatment, colors used in decoration, paste treatments, and firing patterns are substantially different from other local styles during the EIP. More complete examples of this style recovered elsewhere in the Cusco region suggest that the decorations link Muyu Orco style ceramics to the Lake Titicaca region. While these vessels appear to be manufactured with local clays (Montoya et al. 2003), the substantial differences in these fragments suggest knowledge of a non-local production process. One possible explanation of this is that non-local or itinerant potters traveled from the Lake Titicaca region and produced Muyu Orco style ceremonial vessels with local clays. However, more research is needed on this topic.

*Incised Incensiarios.* Only four fragments of these distinctive vessels were recovered from contexts at Minaspata: two rim fragments, one base fragment, and one body fragment (Figure 6.9). These fragments conformed closely to the analysis of this ceramic type conducted by Mohr-Chávez (1985).

![Figure 6.9. Incised incensario pottery fragments from Minaspata.](image-url)
Early Intermediate Period Ceramics at Minaspata. The proportions of Qotakalli style ceramics to other EIP styles at Minaspata are different from those reported at Ak’awillay, and a more limited range of Waru and Ak’awillay style vessel forms were represented. Otherwise, however, the decoration, surface treatments, pastes, and vessel forms of EIP ceramics recovered from the 2013 excavations at Minaspata conform closely to those reported elsewhere in the Cusco region. This suggests that Minaspata was an actively participating member in regional sociocultural interaction and exchange.

The types of pottery produced, distributed, and used at Minaspata represents a sharp and rapid departure from the patterns established and maintained for several centuries during the Late Formative Period. The most visible example is the range of decorative techniques: incising and pattern burnishing is absent, and paint in red, black, and brown dominates the collective assemblage during the EIP. Motifs are entirely composed of rectilinear and curvilinear patterns, and most decorated vessels are slipped in buff, cream, or pale brown colors. Firing patterns also change significantly; a much higher proportion of EIP vessels are fully oxidized compared to those manufactured during the Late Formative Period, and rates of fire clouding decrease, suggesting that greater attention was paid to controlling the firing environments.

Vessel forms also change drastically and are dominated by high numbers of incurving open and restricted bowls with rounded bases and direct rims. The frequency of high-quality drinking vessels also increases significantly during the EIP. Jars and pitchers appear to be fairly rare, and open vessels outnumber restricted vessels by an approximate 2:1 ratio. However, ~60% of the restricted vessels during the EIP consist of slightly
restricted incurving bowls that were probably functionally indistinguishable from the more open bowl forms. These incurving bowls are, on average, smaller than similar vessel forms in the Formative Period, suggesting a concern with serving liquid-based foods (such as stews) and drinks (most likely chicha) to large numbers of individuals. The prevalence of spoons and ladles supports this interpretation, as 17 of 22 total spoon fragments recovered from Minaspata came from EIP contexts.

In addition, EIP pottery provides evidence for limited interaction with the Lake Titicaca region for the first time, in the form of Muyu Orco style pottery and the presence of small numbers of incised incensarios at sites across the Cusco region. Although produced using local clays, the atypical attributes of these pottery vessels suggest that this interaction may have involved the exchange of ideas and people. These vessels mainly appear during the late EIP, a time which is associated with the growing power and complexity of the Tiwanaku state on the Altiplano, centered on the southern side of Lake Titicaca. The interaction between these two regions may have been part of a specific outreach effort as part of this process to spread religious or ideological beliefs, obtain resources, and secure access to trade routes.

At the very least, these changes suggest a large-scale reorientation in the ways that people at Minaspata (and throughout the Cusco region) interacted with each other socially through the procurement and consumption of food and drink. Whereas the vessels of the Formative Period suggest that food was consumed communally in small groups (probably small or extended kin groups), the patterns during the EIP suggest that food consumption became, at least in part, supra-familial, cutting across kinship lines.
The rapid shift in ceramic wares may represent a sudden transformation in the focus of social life in the Cusco region, from communal family-based consumption to one focused on the consumption of alcoholic beverages (especially chicha) as part of commensal feasting, associated with the emergence of elites and incipient sociopolitical spaces (Bélisle 2015:83; Bélisle and Quispe-Bustamante 2017). Such feasting would have been used to solidify alliances, exchange, and elite marriages, as well as for the accumulation of prestige of certain individuals (Dietler and Hayden 2001).

What seems to be missing from this scenario in the assemblage from Minaspata are the large cooking pots, restricted jars, and pitchers that would have been used to cook food or serve and brew chicha for larger groups of individuals. Even if these vessels were undecorated, the rims and bases of these vessel forms would still have been identified and analyzed. Chicha may have been brewed in smaller quantities limited specifically to small groups of elites, or perhaps this activity was constrained to specific areas of the site that were not excavated. While this data is suggestive of a transformation into a regional community oriented towards structured feasting, more research is needed to fully understand the nature of the social changes which took place throughout the Early Intermediate Period.

**Middle Horizon Ceramics of the Cusco Region**

The Middle Horizon in the Cusco region is primarily characterized by the establishment of the Wari sites at Pikillacta and in the Huaró Valley. While some scholars have argued that the Wari state occupation from 600-1000 CE led to significant
changes in the Cusco region, settlement survey indicates little to no change in the
distribution of settlements occurred outside of the Lucre Basin and Huaro Valley, and
Qotakalli style ceramics continue to serve as the predominant pottery used at most local
sites (Chapter 3). Decorated Wari style ceramics appear in small quantities at larger sites
throughout the region, and the beginning of the Middle Horizon marks the appearance of
a new ceramic style in the Cusco region, known as Araway. This style bears a strong
resemblance to the Wari style of Wamanga from the Ayacucho heartland, and its
appearance at many pre-existing local sites throughout the region has led to a debate
about the nature of Wari interaction with the local groups in the Cusco region.

*Araway/Wamanga Style Pottery.* Araway style pottery takes its name from a type-
site in the Cusco Basin, where it was first reported by Nilo Torres Poblete (1989); it has
since been further described by Glowacki (1996) and Bauer (1999; Bauer and Jones
2003), and identified at sites throughout the Cusco region (Bauer 2004; Bauer and Jones
2003; Bélisle and Covey 2010; Covey 2014e; Covey et al. 2013; Zapata 1997).

Araway style ceramics are characterized by geometric designs applied in thick
brushes, particularly the use of broad red bands outlined with narrow black lines over a
buff or very pale brown slip. These designs frequently adorn the interior of straight-sided,
flaring bowls, which is the most common form of Araway style ceramics recovered.
These types of bowls strongly resemble those of the Wari Okros style. In addition, small
decorative motifs applied in repeating fashion, such as dashes, checks, hooks, and X’s in
black paint are common, while straight and undulating lines often decorate the interior of
these bowls in both black and red paint (Bauer 1999:68; Glowacki 1996:200, 2005b:106;
Torres Poblete 1989). Other vessel forms have also been identified at the site of Pikillacta in small numbers, including large globular jars with a convex base (some with flange rims), necked jars, and possible tumblers (Glowacki 1996:201). Pastes typically range in color from light orange to orange-red and slip is usually very pale brown (although sometimes occurs in darker shades, or even orange-brown, due to inconsistencies in firing conditions). The surface is usually wiped or brushed smooth, but sometimes also lightly burnished. Some fragments have no slip and/or are unburnished (ibid).

Glowacki was the first to note the strong similarities between Araway style and Wamanga style pottery, a style produced in the Wari heartland around the modern city of Ayacucho (1996). Wamanga style pottery was first described and illustrated by Benevides (1965) and Lumbreras (1974) and later by Anders (1986). This pottery is less iconographically loaded or complex than more formal Wari style vessels (Owen 2010) and has typically been considered to be the local or domestic class of Wari pottery for Ayacucho during the Middle Horizon Epochs 2-3. Because of these similarities, Glowacki argued that Araway was not a “local” Cusco style, but rather Wamanga style pottery introduced to the Cusco region by the Wari state sometime during the Middle Horizon, where it was probably locally produced (Glowacki 1996:206–207, 2005b; see also Fullen 2015).

While most scholars recognize similarities in the production and decoration of Araway style ceramics in Cusco and Wamanga style pottery from Ayacucho, some disagree about whether this represents local Wari production or the imitation of a quotidian Wari style by local groups (Bauer 2002, 2004; Bauer and Jones 2003; Covey
2006a, 2014e; Covey et al. 2013). The former interpretation would imply strong state control over the production and distribution of Araway/Wamanga style pottery specifically for distribution to local populations, perhaps along with intermarriage arrangements or other cultural interaction, and would reinforce a reconstruction of the Wari state as a centralized administrative empire ruling over annexed provinces. The latter interpretation, on the other hand, suggests a much more voluntary and provisional/intermediate engagement with the Wari state colonies along the Vilcanota River. While fully resolving this issue is beyond the scope of this dissertation, a summary of the existing literature will help to shed light on the nature of the Wari occupation and the Middle Horizon in the Cusco area.

On the one hand, designs and decorative motifs on Araway pottery does closely resemble those of many Wamanga style vessels, and most Wamanga vessel forms are replicated with high fidelity in the Cusco region. Only a limited subset of decorative motifs from Ayacucho Wamanga pottery are present in Cusco, but as Glowacki points out, not all Wamanga vessel forms nor designs would be expected to be copied in the provinces, nor all ceramic types to be imported (1996:206–207). In addition, a similar phenomenon is present elsewhere in the Andes: Wamanga style pottery has been reported at sites around major Wari centers in the Beringa Valley in southern Peru (Owen 2007, 2010), at the site of Tenehaha in the Cotahuasi Valley (Lopez et al. 2015) and at the site of Azangaro closer to the Wari heartland in the Ayacucho region (Anders 1986). The Wamanga pottery in these different regions also shows a limited range of design motifs, and seem to be drawn from a different subset or corpus of Wamanga style decorative
canons (although sufficient overlap from region to region links them to the same phenomenon) (Fullen 2015:138). These observations support the idea that the local production of Wamanga style pottery was related to a standard state practice operating out of Wari colonies in different areas.

On the other hand, within the Cusco region, the distribution of Araway/Wamanga style pottery decreases in intensity as one travels from the western end of the Cusco Basin, rather than from the major Wari centers in the Lucre Basin and Huaro Valley to the east, suggesting that the center of production and distribution of Araway/Wamanga style pottery was located there (Covey et al. 2013). This distribution pattern is similar to the pattern observed for Qotakalli pottery. Araway/Wamanga ceramics tend to appear at sites with existing Qotakalli components (Bélisle and Covey 2010). Together, these patterns suggest that the Araway style was a local imitation of Wari wares, produced away from Wari centers and distributed mostly to local communities. Other Wari style ceramics, by contrast, showed a radial pattern decreasing in intensity as travel time from Pikillacta increased, reinforcing the interpretation that these styles were used by Wari colonists and exchanged with their nearby local groups, but were not generally associated with state-directed changes to the everyday life of the people living in the Cusco region (Covey et al. 2013:546).

Characterization of the chemical composition of over 200 Middle Horizon fragments from the Cusco region and from the Wari site of Conchapata (located near the Wari capital city in Ayacucho) helps to resolve this issue (Montoya et al. 2003, 2009). The composition of finer Wari vessels at Pikillacta show a mixture of chemical signatures
corresponding to those from Conchapata and those which are more local to the Cusco region, suggesting that some Wari style vessels were locally made and some were imported from Ayacucho. However, almost all Araway/Wamanga samples tested were closely associated with the chemical signatures of local Cusco pottery. While chemically distinct from Qotakalli style samples, these vessels showed enough similarities that a clay source or center of production located in the Cusco Basin could be hypothesized (Montoya et al. 2003:181–182). This compositional data supports the idea that local potters producing Qotakalli style pottery during the EIP may have gradually shifted towards the production of Araway/Wamanga style vessels as they were drawn into the cultural orbit of the Wari state during the Middle Horizon (Bauer and Jones 2003:15).

Two sampled Araway/Wamanga style sherds may have been exceptions to this general pattern and showed strong compositional affinities to Wari style sherds from Conchapata, suggesting that small amounts of actual Wamanga style pottery may have been introduced to the Cusco region as models for local imitation and production (Glowacki 2005b:112). This type of interaction may also explain the presence of Wamanga style pottery near Wari sites in Beringa and the Cotahuasi Valley, which demonstrates a similarly restricted set of Wamanga style motifs and decorations (which are distinct from those Wamanga style motifs present in the Cusco region).

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118 Interestingly, five samples of Wari style pottery recovered from the site of Conchapata showed strong chemical affinities to local Cusco style wares, suggesting that small number of Cusco-produced Wari style pottery was imported to the Ayacucho heartland through a system of bi-directional exchange (Montoya et al. 2003:169, 2009).

119 This observation apparently refers to the studies by Montoya and colleagues (2003; 2009), but was not found in their publications and was only described in Glowacki (2005). in both cases, Araway/Wamanga style pottery appears to have been grouped with the larger group of locally produced Wari style samples.
However, if true, this interaction would not necessarily imply that the local production of Wamanga style pottery in these regions was the result of a top-down state directive. Given the lack of archaeological signatures for strong Wari state control over most of the Cusco region, Araway/Wamanga style pottery most likely represented a form of cultural and material engagement with local populations that was relatively low investment, but still served to draw existing communities into the Wari cultural and economic spheres to varying degrees. Fullen has examined this phenomenon using Arthur Gell’s concept of secondary material agency (1998) to argue that the Wamanga style of ceramics extended the agency of the Wari state across space, serving as “ambassadors for the empire” (2015:139). The appearance of Wamanga style pottery (or local Wamanga imitations) in various parts of the Andes – particularly in areas where Wari presence was strong – was an outreach strategy to areas immediately outside the confines of Wari state colonies. This outreach allowed local people to feel part of the Wari cultural sphere while maintaining a sense of local identity by selectively appropriating particular aspects and decorative motifs. Wari allies may have manipulated their agenda to encourage subjects to feel like the belonged, rather than feeling like they had been acquired. By allowing – perhaps even encouraging – this style of pottery to enter the domain of local production and use, the Wari state encouraged a form of cultural commitment (however minor) to the Wari ideological, social, and economic spheres, and the benefits it afforded to local groups.
Additional evidence for Wari interaction in the region is the small quantities of Wari style ceramics present at sites throughout the Cusco region. These include the formal decorated styles identified in Ayacucho, such as Chakipampa, Viñaque, Okros, and Robles Moqo. Because these styles have been described thoroughly by others, and fragments of Wari pottery recovered at Minaspata are rare, extensive discussion these styles is unnecessary (but see, for example, Brewster-Wray 1990; Cook 1987; Glowacki 1996; Isbell and Knobloch 2009; Knobloch 1983, 2012; Menzel 1964). Wari style pottery is characterized by high-quality polychrome painted decoration on a number of distinct vessel types, set in wide range of colors on slipped and highly burnished surfaces, generally of red, orange, yellow and light brown. Most motifs and bands are outlined in a thin or medium black line. Representations of elite individuals are common, as are depictions of a ‘front-facing deity’ common to Wari and Tiwanaku iconography during the Middle Horizon. Individual faces are also frequently molded on vessels where they are further elaborated with painted designs, which is especially common on large globular jars with narrow, vertical restricted necks, and face-neck jars are found in a wide variety of Wari contexts. Effigy vessels of individuals and animals are often among the more spectacular examples of Wari style pottery.

Wari-Related Pottery (Muyu Roqo). While Wari style fragments are rare outside of the Wari centers and the immediately surrounding areas, a specific subset of Wari and

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120 For the purposes of this dissertation, Wari style ceramics are defined as pottery that closely conforms to the Wari state canons in decoration and form. “Wari-related” pottery by contrast, refers to locally produced pottery that is clearly influenced by (or references) Wari decorative color schemes, motifs, decorative arrangements, or vessel forms, but does not closely correspond to official Wari state ceramic canons documented from Ayacucho or other Wari sites.
Wari-related pottery has been identified and described by Bauer (1999) in large quantities at the site of Muyu Roqo in the province of Paruro. Survey and test excavations at the site, which is located on a mountain slope immediately west of the town of Paruro (ibid: 63) yielded hundreds of black- and orange-ware Wari-related ceramic fragments, along with nearly 2000 camelid bone fragments. Although some isolated Chakipampa style pieces were identified at Muyu Roqo, the vast majority of the fragments were Okros-style straight-sided bowls or Wari-related fragments. 84% of the ceramics recovered were fine decorated ware, and were subdivided into four categories (ibid: 64).

The first category consisted of Okros style orangeware, primarily straight-sided flaring bowls with flat bases (similar to those constituting the majority of Araway/Wamanga style vessels found in the Cusco region). The remaining categories were all drinking vessels, and while clearly Wari-influenced, do not correspond to existing Wari styles (Glowacki 1996:91). The most common type of vessel, and the only type which was recovered at Minaspata, is a polychrome orangeware drinking vessel. These tumblers were decorated in geometric designs (especially bands and latticework designs) in white, gray, yellow, orange, and red-orange on the upper two-thirds of the vessel exterior. Black is used in thin lines to outline bands. The surface color was generally light orange to brick red in color, covered with a thin slip of smooth body clay and lightly burnished on the upper third of the interior and exterior vessels. They are at least 15 cm high, with slightly flaring rims which sometimes narrow slightly towards a rounded lip.
Middle Horizon Ceramics at Minaspata

Only 137 total sherds belonging to Middle Horizon styles were recovered from excavated contexts at Minaspata. These include 58 Araway/Wamanga style sherds, 21 Wari style sherds, 30 orangeware tumbler fragments similar to those recovered at Muyu Roqo, and 28 unidentified fragments assigned to the Middle Horizon based on decorative techniques. However, only 34 of these fragments were came from stratified contexts dating to the Late EIP or MH; the majority were recovered from contexts dating to the Late Intermediate Period, the Late Horizon, or mixed contexts.

The main vessel types were composed of straight-sided, everted open bowls with flat bases and decoration on the interior surfaces; tumblers, most of which had walls that were straight-sided and vertical or slightly flaring from the base; restricted incurving bowls; and open curved bowls (although these latter two vessel types were rare).

Araway/Wamanga Style Pottery. The majority (77.3%) of Araway/Wamanga type rims analyzed belonged to straight-sided everted bowls with direct rims and diameters ranging from 9 to 21 cm, with the majority concentrated between 12 and 15 cm or 18 and 20 cm. The remainder was composed of incurving restricted and open bowls with rim diameters between 11 and 15 cm. Most vessels were slipped in a very pale brown or buff color (not dissimilar in appearance to some Qotakalli style vessels). Decoration occurred on the exterior of some vessels, particularly along the rims, although most of it occurred on the interior of bowls in black and red paint (Figure 6.10). Common motifs included thick red bands oriented horizontally along the rim, or vertically descending from the rim, usually outlined in a single black line. Small repeated hooks or curved lines and circles
divided by lines and dots filled up negative space created by the red bands. These designs are highly consistent with examples described elsewhere.

Araway/Wamanga style fragments were usually fully oxidized (76%), with few examples of fully or partially reduced fabrics. Twenty-two of the 56 (39.3%) fragments showed evidence of fire clouding, which is consistent with other locally produced styles during the EIP and LIP. Oxidized pastes fired to a pale red, salmon-pink or reddish-orange color.

Wari Style Pottery. Wari style vessels were rare, but highly distinctive in decoration and the use of multiple colors, including black, orange, red, yellow, and white. Bands and other designs are nearly always outlined in a medium black line (Figure 6.11). Many of the fragments were too small to identify individual motifs, except in a few cases. Of the vessel forms that could be identified, most were tumblers. Some of these
fragments contained small sections of designs that corresponded to Viñaque Wari style found at Pikillacta (Glowacki 1996) (Figure 6.18, below), but no specific style designations were attempted.

**Figure 6.11. Wari style pottery fragments from Minaspata.**

*Muyu Roqo Style Pottery.* Fragments corresponding to Wari-related orangeware tumblers from the site of Muyu Roqo recovered at Minspata were fired mostly to a red or light red fabric. Sixty percent were fully oxidized, and 26.7% had a darkened core in the profile with oxidized interior and exterior surfaces. These vessels were consistently slipped in a red or reddish-brown color, and two-thirds were lightly burnished or polished to a light or medium shine on the exterior (Figure 6.12). Interiors were generally scraped
or smoothed, and occasionally partly burnished on the upper third. Decoration mainly consisted of bands and geometric designs in light or medium gray, yellow, or black, sometimes outlined in white-yellow lines on a brick red background. Yellow paint was often eroded from the surface, with only traces of the original coloring still evident. While a few of these tumblers had rims large enough to determine size, these tumblers tended to be larger than EIP style drinking vessels, ranging between 12 and 15 cm in rim diameter.

Middle Horizon Ceramics at Minaspata. While Middle Horizon style pottery at Minaspata was rare, the small number of fragments of the Wari and Wari-related style recovered provide some insight into the changes in pottery occurring during the Middle Horizon and the effect on later periods. The most notable change is the shift from
incuring bowls common during the EIP (especially those with rounded bases and standing on small supports) to the straight-sided open bowls more common in Araway and Okros-style bowls. The diversity of colors used in polychrome vessels and the frequent appearance of red bands outlined in black is also distinct from earlier ceramics, but this vessel shape and the use of thick red outlined bands becomes more common during the LIP. These traits may be a result of Wari colonization in the region and the complex interactions between Wari and local populations throughout the Middle Horizon.

Late Intermediate Period Ceramics of the Cusco Region

The distribution of pottery throughout the Cusco region during the Late Intermediate Period is characterized by regional diversity following the collapse of the Wari state ca. 1000 CE. Several distinct but related styles were produced in different areas, including the Killke style in the Cusco region (Bauer 1999, 2004; Bauer and Stanish 1990; Dwyer 1971a; Ixer and Lunt 1991; Lunt 1987; Rivera Dorado 1971a; Rowe 1944), the Colcha style in the province of Paruro (Bauer 1992, 1999; Bauer and Jones 2003), the Cuyo style in the Chonga Basin north of the Vilcanota River (Covey 2006a), the Ollanta LIP style near the site of W’ata in the Ollantaytambo area (Kosiba 2010), and the Lucre style in the Lucre Basin (Chatfield 1999, 2007:260–261; McEwan 1984a; McEwan et al. 2002:294–295). Other LIP styles may also exist elsewhere, such as in the district of Maras near the Inca site of Cheqoq (Covey 2014e:113–115; Quave 2012). These related styles share similarities in geometric design elements decorated in
red and black typical of the south-central Andes in the centuries following the collapse of the Wari and Tiwanaku states. The primary styles identified at Minaspata were the Killke and Lucre styles, and discussion will be limited to those (although other poorly defined styles may have been recovered in small numbers at Minaspata and categorized as “Unknown LIP” pottery).

Lucre Style Pottery. The majority of the identifiable pottery fragments recovered from Minaspata consist of the Lucre style. This style has been cursorily defined in previous publications by scholars working in the Lucre Basin (Chatfield 1999, 2007:260–261; McEwan 1984a; McEwan et al. 2002:294–295), although it was first reported by Manuel Chavez during his excavations at the site of Batan Urco in association with Wari style pottery (Rowe 1956b:142). Until the last few decades, the Lucre style was believed to date to the Middle Horizon (e.g., McEwan 1984a:142), but has since been established as an LIP pottery style from stratified contexts at Choquepukio (McEwan et al. 2002). Chavez divided the Lucre style into two types (see also Barreda Murillo 1973; McEwan 1984a): Lucre B, which is influenced by Wari style pottery in form and some decorative motifs; and Lucre A, which seems to be more related to Killke style pottery.¹²¹

Lucre style sherds have been reported from a wide area to the southeast of Cusco, expending perhaps as far as the site of Raqchi at San Pedro de Cacha (McEwan et al. 2002:294) and small numbers of fragments have been identified at other sites in the Cusco region. The greatest densities of this ceramic style center on the Lucre Basin, especially from the site of Choquepukio. McEwan and colleagues found that the Lucre

¹²¹ Chavez’s ceramics from the site of Batan Urco was destroyed and no analysis was ever made (Glowacki 1996:261).
style painted motifs overlap somewhat with those of the Killke style, and include some antecedents to the Inca style, but many of the design motifs on these vessels were heavily influenced by the earlier Wari styles, as were such forms as tumblers, bowls, and large jars (see also Chatfield 1999). The presence and form of face-neck vessels suggest a form that may have been introduced into the region during the Middle Horizon.  

The geometric designs were executed using black or dark gray, cream, or red colors on a frequently burnished, brown or light brown field. Designs were painted in primarily in red and black colors, including thick red and black bands and geometric, rectilinear designs in both colors. These characteristics are also shared with Killke style pottery, but those of Lucre style differ in execution and arrangement, with patterns and designs boldly set four-square on the pot (Chatfield 2007:260). The diagnostic designs of the Lucre style include squares containing single or double lozenges, and a “key” pattern, consisting of an open circle connected to a stem with multiple crossbars executed in red with a black outline. In some instances, this key ended in a curved arc resembling a *tumi* blade; in others, it ended in an open circle or with no elaboration. These designs appear most frequently on tumblers, pitchers, and large restricted-neck jars probably used to make and serve chicha. Lucre style plates and shallow bowls typically have a thick red cross bordered in single or double black lines and extending from rim to rim across the center of the vessel (ibid).

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122 Although face-neck jars appear rarely in the Qotakalli style, Qotakalli ceramics continue into the MH in most places and may have not been present at the beginning of the EIP. Fragments of jar rims and necks bearing what may be eyes and parts of faces also appear in images of the recently described Ak’awillay style (Bélisle and Quispe-Bustamante 2017:567, Figure 9B), but face-neck jars at the site of Ak’awillay may also have been used into the Middle Horizon.
Petrographic analysis of small numbers of Lucre style fragments have suggested that these vessels are made in few different but overlapping fabrics. At least some of the Lucre style vessels appear to have been produced with crushed andesite added as temper to the fabric (Ixer, Lunt, and Sillar 2014; Ixer, Lunt, Sillar, et al. 2014; Lunt 1987). Andesite tempered fabric is a hallmark of Cusco Inca style ceramics, and was probably added because of technological advantages for the production and serviceability of large vessels in particular (Ixer, Lunt, and Sillar 2014:36–37; Ixer and Lunt 1991:160). Killke style ceramics, on the other hand, have a different fabric; although based on the use of a clean clay, Killke style fabrics were tempered with a limited range of medium-grained, feldspathic rocks similar in appearance to each other, without andesite (Ixer, Lunt, Sillar, et al. 2014:124).

**Killke Style Pottery.** The Killke style is one of the best-documented pottery styles in the Cusco region; it appears to be dominant in the area during the Late Intermediate Period and was probably produced in the Cusco Basin. Although radiocarbon dates associated with contexts are relatively rare (and contain large error ranges), Bauer has placed the beginning of Killke style pottery production around 1000 CE (Bauer 1999). Stratified excavations suggest that this style continues to be used into the Late Horizon and possibly the early Colonial Period (Chatfield 2010; Covey 2014e:14; Kendall 1985). Rowe was the first to define Killke style pottery, and he positioned it as an “Early Inca” or pre-imperial Inca pottery based on stratigraphic and stylistic relationships (1944). Since then, a number of scholars have conducted analyses of Killke style ceramics, further defining vessel form, stylistic decorations, and paste and fabric technology (Bauer
The specific attributes, chronology, and distribution of Killke style pottery has been debated, and the lack of consistent application of this label to ceramics around the Cusco region has created some confusion with regards to its definition. The full extent of this debate, however, is beyond the scope of this chapter (see Chapter 3 for a summary). As a result, the remainder of this section will focus on the attributes that define the Killke style.

Killke style pottery is composed of a medium-coarse fabric containing a moderate quantity of non-plastic inclusions, which vary in color from a ashy white to a dull, dark gray and appear to be high in feldspars (although other stones and minerals have been identified). The clean clay matrix and bimodal distribution suggest that the clay was washed and tempered. The surface of the vessel frequently fires to a buff or salmon-pink color (Bauer 1999:15; Lunt 1987).

The exterior and interior surfaces of bowls and the exterior of other Killke style vessels, are covered in a buff or occasionally cream-white slip; the surfaces are often burnished. Decorations are normally geometric in composition and form. Narrow lines in black and red, thicker bands in red, cross-hatched triangles, and bands of diamonds or triangles are the most common elements. The thick red bands are frequently outlined by one to three parallel black lines. Other common motifs include sets of nested triangles that alternate between red and black, linked ovals with central dots, large areas covered with black cross-hatching, and pendant rows of solid or cross-hatched triangles. Stylized
camelid figures also occur. Black is the most frequently used color, followed by red and, rarely, white. The paint is frequently watery, resulting in a low to medium color tone (Bauer 1999:15–16). While the black is consistent, red varies from a deep purple to a dark pink, depending on the conditions of application and firing (Dwyer 1971a:105). Many scholars have noted what Rowe called a “characteristic carelessness of execution” (1944:49) compared to Classic Inca style ceramics, which is most apparent in broad and quickly executed brush strokes and frequent overlapping of adjacent designs.

Although Dwyer (Dwyer 1971a) attempted to identify four phases (A-D) of Killke style pottery based on stylistic differences, his system never gained much popularity. This may be because few clear differences could be found until Phases C and D, which were usually mixed with Classic Inca pottery on the surface of sites where it was collected. These phases were probably either the immediate precursors of Classic Inca pottery (ibid:135), or were contemporary with this style (see Chatfield 2007, 2010; Rivera Dorado 1971a). As Dwyer states, “From the establishment of the Killke style there was little significant change in peoples’ ideas about how pottery should be decorated until the radical social change occurring at the advent of the period of the Inca empire. […] Killke represents a long period of continuous but gradual change in pottery decoration” (1971a:137). The lack of easily identifiable change in the Killke style over the LIP renders any attempt at subdivision difficult.

Killke style bowl forms include both straight-sided diverging walls and slightly incurving walls. Although there is considerable variation, the most common bowl form has straight or convex-curved sides that flare outward from a flat base (known as a
tazon). They range from resembling open deep plates to having sides that extend sharply upward. The exteriors are rarely decorated, but the interior and rim areas usually are, frequently with a simple black band, or a band containing small pendant triangles along the rim; descending cross-hatched triangles covering large areas of the interior and bordered by thicker lines are also common. In other examples, these triangles are filled with a loose cross-hatch design of three or four fine black lines (sometimes referred to as a “Scotch plaid” pattern). A thick red band bordered by thin black lines frequently will appear running across the center of the interior of these bowls (Bauer 1999; Bauer and Stanish 1990).

Shallow incurving bowls with wide flat bases have also been identified with a limited range of design motifs, usually on the exterior of the vessel, centered on two fields separated by nub handles. These include thick black bands on the rim and lip, and a series of geometric motifs and bands tightly clustered and finely drawn. These fields include bands of interlocking nested triangles, vertical triangle chains that result in bow-tie patterns, multiple zigzags, cross-hatching containing dots, a checkerboard pattern, and many others. These bowls are consistently finer in terms of surface finish, wall thickness and vessel symmetry than other bowls.

Few large jars in the Killke style have been recovered intact, and the forms are difficult to reconstruct. Most jars had a flat base, ovoid body, and concave neck (Bauer 1999:18). Single strap handle jars had globular bodies that gradually swell outward from a flat base, with a single vertical handle running from the rim of the vessel to its shoulder or lower neck. These pitcher vessels were probably used for serving liquids and came
with a variety of handles (Bauer and Stanish 1990). Several varieties have been noted, including face-neck jars (with a face wearing a headdress portrayed in paint or raised applique on the neck of the jar) and jars with high, arcing handles raised above the level of the rim. Straight-sided drinking cups with slightly flared lips decorated in upper and lower panels have also been reported but appear to be fairly rare in most collections (Bauer 1999:20).

Late Intermediate Period Ceramics at Minaspata

Ceramics during the Late Intermediate Period at Minaspata display many of the same characteristics found elsewhere, such as the use of red and black paint in geometric and rectilinear decorations and the use of brown, buff, or reddish-orange fabrics. Vessels tend to be much larger in size than during the Early Intermediate Period, and the appearance of a class of very large restricted neck jars and pitchers occurs for the first time at Minaspata. Face-neck jars also become part of the local assemblage in the LIP, something that can likely be traced to Wari influence on local and regional pottery traditions during the Middle Horizon. While some incurving bowls occur, these are not the round-bottom, supported incurving bowls that characterized the Qotakalli and other EIP styles. Instead, straight-sided open bowls with flat bottoms and divergent walls, common in the Araway/Wamanga and Wari Okros styles, form a strong component of the LIP assemblage at Minaspata; flat-bottomed simple bowls also compose a relatively small part of the corpus of vessel forms during the LIP. Similarly, the use of thick red
bands bordered in black lines as decorative techniques in the Araway/Wamanga style seems to continue on Lucre and Killke style vessels in the LIP.

While Lucre style vessels form the bulk of the analyzed assemblage from contexts dating to the LIP and are probably locally made (at least, produced in the Lucre Basin), small amounts of Killke style fragments also appear, and Killke-like motifs and designs appear with increasing frequency on Lucre style vessels, suggesting increasing levels of interaction with the rest of the Cusco region as the LIP continues. In addition, a number of distinctive fragments bearing characteristics unique to LIP ceramics (such as paint color, decorative technique, fabric, and/or vessel form) could not be easily assigned to either of these two main styles due to fragmentation were assigned to the “Unknown LIP” category (Table 6.3).

Lucre style pottery composes between 46 and 49% of the overall assemblage analyzed throughout the LIP until the beginning of Late Horizon contexts. Killke style pottery composes between 7 and 13%, although this proportion increases during each phase. The remainder is composed of Unknown or Plainware LIP vessel fragments (13-21%); small amounts of Inca style sherds appearing in the Late LIP phase, which are probably a result of slight mixing and post-depositional artifact movement, and small quantities of earlier ceramics from the Formative Period, Early Intermediate Period, and Middle Horizon were also recovered from LIP contexts, generally each representing less than 2% of the overall assemblage for each phase. The surprisingly large proportion of Qotakalli style pottery in each phase is an exception; but – given the ubiquity of Qotakalli pottery in earlier deposits and the small absolute number of sherds in each phase, site
formation processes including late breakage and deposition, slight mixing, and/or reuse of soil from other areas for fill can explain the presence of Qotakalli style ceramics present LIP contexts, rather than continued production.

Compared to the patterns observed at Minaspata during the EIP, the proportion of restricted to open vessels during the LIP increases considerably, particularly for jars and pitchers with restricted necks: 295 sherds could be identified as restricted vessels across all styles, compared to 377 open vessels. 74.2% of these restricted vessels were jars or possibly pitchers. Restricted bowls and *olla* cooking vessels formed the remainder. Open plates appear to be more frequent than in earlier periods, composing nearly a third of the

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Table 6.3: Quantities and percentages of fragments of each style appearing in LIP contexts, divided by phase.
unrestricted vessels. Drinking vessels also occur in notable amounts, composing 11.2% of the unrestricted vessel assemblage, although most are Lucre style. Open bowls are still the most commonly occurring form, but in smaller proportion to the overall assemblage than in earlier periods.

Lucre Style Pottery. The earliest examples of Lucre style pottery at Minaspata occur in stratified contexts radiocarbon dated to 1000-1045 CE (Figure 6.13). These ceramics are distinct in decoration, paste, and surface treatment from Killke and related style pottery, which appear around the Cusco region at this time. The evidence from Minaspata suggests that the division of Lucre style pottery into “Lucre A” and “Lucre B” has some basis, but due to few sharp decorative, technological, or chronological distinctions, this subdivision is best considered a useful heuristic device rather than a firm typology. Much more research is needed to fully determine the degree to which these two categories are analytically reliable, particularly given the relative paucity of complete or near-complete Lucre style vessels recovered from Minaspata.

The Lucre A grouping can be described as including vessels with a higher prevalence of motifs and decorative techniques that appear on Killke and other LIP regional styles, with a strong emphasis on linear and geometric designs. However, Lucre A vessels tend to be much larger than most Killke style vessels of comparable form, and are made with local fabrics, forms, and surface treatments. The Lucre B grouping seems to demonstrate a stronger Wari influence, in vessel form and decoration. Evidence for this can be found in particular geometric motifs and designs which mimic some frequently identified on Wari vessels, a tendency to outline specific bands and motifs in a
medium black line, the prevalence of large, globular restricted jars with straight necks, and a relative emphasis on molded face-neck jars and pitchers.

Figure 6.13: Lucre style pottery fragments from Minaspata.  
Because the Lucre A and Lucre B groupings are poorly defined in the existing literature, determining the boundaries of these groups into typological categories is difficult. Little difference between these two categories in terms of vessel forms or surface treatment has been documented, although later examples of several Lucre A vessels in the late LIP are covered in a chalky, pale yellow or cream slip which poorly adheres to the vessel and tends to be highly eroded. The appearance of this slip is more commonly associated with Killke-like geometric and rectilinear designs (see below). In addition, some fragments contained examples of designs more associated with the Killke style and others derivative of Wari style decorations on the same vessel. While the proportion of Lucre B appears relatively constant at Minaspata throughout all phases of the LIP, the prevalence of Lucre A vessels seems to increase through time until the arrival of Inca material culture at the beginning of the Late Horizon.

Lucre style vessels are generally produced with a hard paste of medium texture, although a small number of coarse-textured vessels occurred as well, especially in the largest class of restricted neck jars. Andesite tempering was visible in perhaps 40-50% of Lucre fabrics as well (Ixer, Lunt, Sillar, et al. 2014; Ixer, Lunt, and Sillar 2014; Lunt 1987), identified both through hand inspection and through magnified images taken with a digital microscope. Unslipped surfaces are usually fired to red (35.2%), reddish brown (19.1%), light red (13.9%), or reddish orange (9.4%), although vessels with brown, light brown, reddish gray, and orange surfaces were also observed in smaller quantities. With a few exceptions likely resulting from firing accidents, the paste fabrics were generally fired to red (41.5%), light red (33.7%), or orange (10.4%).
Approximately a third of the analyzed vessels showed evidence of fire clouding (36.3%), which is similar to the average for all LIP vessels. Nearly half (48.3%) had fabrics that were fully oxidized, while only 2.2% were fully reduced to gray or black, and 4.3% were uniformly dark brown. Two other oxidation patterns were common: those with the interior side of the vessel reduced and the exterior fully oxidized (20.4%), and vessels with a reduced core while the interior and exterior surfaces were oxidized (18%). The high frequencies of these latter two categories, and the rate of fire clouding on vessel surfaces, suggests that Lucre style vessels were most likely fired in an open fire, and that potters had control over the temperature and firing conditions but were unable to successfully regulate air control at times, either because of firing time or the position of the vessels. Firing conditions for ceramics at Minapsata is consistent from the end of the Formative Period until the beginning of the Late Horizon.

Lucre style restricted neck jars and pitchers were much more common than in previous periods. These tend to be larger than in previous periods as well, ranging between 6 and 29 cm in rim diameter with an average of 13.7 cm. However, most of these restricted neck vessels clustered between 9 and 15 cm, with a second smaller grouping 22 and 25 cm, suggesting the existence of two distinct classes of vessels size (Figure 6.14).
Most restricted neck vessels appear to be globular, with straight-necked vessels outnumbering vessels with flaring, outwardly curving necks by a ratio of 3 to 1. Straight-necked restricted jars have vertically oriented necks with direct or slightly everted rims.

Figure 6.14. Rim profiles of Lucre style restricted neck vessels.
near the lip, and range in rim diameter between 16 and 25 cm, although two distinct classes of vessel size can be identified here as well. The smaller category of vessels outnumbers the larger group by an approximate 4 to 1 ratio. These vessel forms resemble Wari style globular restricted-neck jars (e.g., Cook and Glowacki 2003; Glowacki 1996). Restricted neck vessels with flaring, outwardly curving rims have slightly larger rim diameters, ranging between 8 and 29 cm, but given the form of the rim, is to be expected probably does not represent larger vessel or orifice size.

Clearly defined pitchers, with vertical strap handles attached to the rim and the shoulder of the vessel, are rare: only seven Lucre style vessels were identified (Figure 6.15).123 These were slightly smaller than the overall group of restricted neck vessels, ranging between 6 and 19 cm in rim diameter, although five of the seven vessels were between 9 and 13 cm. In addition, four very large neckless jars were also identified, ranging in rim diameter from 22 to 50 cm. This vessel form has been ethnographically identified as involved in the production of chicha (e.g., Hayashida 2008; Jennings and Chatfield 2008), but they may have been used for other purposes in the past.

123 The only visible distinction between restricted-neck jars and pitchers from the perspective of ceramic analysis is the presence of this handle attached to the rim, which is only present on a small portion of the rim. In other words, this vessel form may be underrepresented in analysis due to fragmentation, and some of the restricted neck vessels discussed above may have been pitchers.
A few examples of incurving restricted bowls with direct rims were also identified. Ranging between 7 and 11 cm in diameter, these bowls may have been intended for personal consumption of soups or stews. Cooking vessels, or ollas, often had horizontal strap handles along the body a few inches below the rim and direct or slightly everted rims. These vessels were relatively rare, and only fourteen vessels of this type could be identified out of the entire assemblage. The average rim diameter for these cooking pots was 13.6 cm, but most vessels ranged between 10 and 15 cm. Three larger cooking vessels were also recovered, with rim diameters of 18, 20, and 25 cm.\footnote{These were not included in the mean calculation.}
Straight-sided divergent bowls with direct rims are the most common unrestricted vessel type, constituting 61.1% of the open vessels analyzed (Figure 6.16). These vessels, which resemble the tazon type used to describe similar bowls in the Killke style, frequently had small decorative handles attached to the rims (presumably two handles were attached on opposite sides of the vessel), made by adhering a small roughly triangular lump of clay to the rim and folding the apex of the triangle over to form a sort of “scallop” shape. These were generally sloppily constructed and left unsmoothed.

Open bowls with curved vessel walls were also recovered, although in smaller amounts, and lacking the small handles on straight-sided bowls. All bowls ranged in rim diameter from 8 to 41 cm, with an average of 17.3 cm, although only two of these vessels were larger than 24 cm. Most vessels clustered between 14-18 cm and 20-24 cm. No significant difference between the sizes of straight-sided and curved bowls was identified, although this result may be due to the small number of the latter type.

A small number of plates were also identified, but deep plates or shallow bowls, with sides inclined approximately 30-45 degrees from the base, were the most common. They ranged in rim diameter from 9 to 29 cm, but again, two size groupings were identified, one between 14 and 18 cm, and the other between 20 and 25 cm. These plates or shallow bowls may have been functionally indistinguishable from the more inclined straight-sided bowls.

Drinking vessels were better-represented than in to earlier periods, although only 27 drinking vessels were identified. These tumblers had straight sides which were vertically oriented or slightly divergent (Figure 6.10). Approximately half had direct
rims, while the others had everted rims. These vessels also had two distinct size classes, with rim diameters evenly divided between groups of 6-10 cm and 12-16 cm. Decoration on these vessels often extended to the rim.

Figure 6.16. Rim profiles of Lucre style open bowl vessels from Minaspata.

Most exterior surfaces of Lucre style vessels were smoothed, weakly burnished, and/or slipped; rarely, vessels were polished to a high shine. The interior of most restricted jars and pitchers were roughly scraped, while the interiors of most open plates
and bowls were smoothed or burnished but less frequently slipped. Drinking vessels were often slipped on the exterior surfaces, which continued several centimeters onto the interior below the rim. Slip colors on most vessels included light or weak red (20.9%), or red, reddish-brown, or reddish-yellow (30.3%). Slip was most common on drinking vessels and large jars.

Some Lucre A jars (and a small number of bowls: 4.8% of slipped bowls) were slipped with a chalky, pale yellow or very light brown slip which was frequently eroded from the surface (31.8%) (Figure 6.17). Although having a higher proportion of Killke-like designs and motifs, these vessels were designated Lucre A (rather than Killke) because of the slip and the vessel size. This treatment is more common in the later stages of the LIP and the Late Horizon.

Figure 6.17. Lucre A ceramic fragments from large jars, with a chalky cream-colored slip, often partly eroded from the surface.
The most common form of decoration was paint applied to the surface in dark or brownish red; red; and black. Paint was sometimes thinly applied, giving the impression of colors ranging from pale red to pale dark brown. Designs ranged from carefully applied to sloppily executed. Bands in black and red were common, and were often flanked by one to three thin or medium black lines on the interior of open vessels, but was rare on the exterior of restricted jars and pitchers. Individual motifs were generally painted in red and outlined in black paint. Incised and molded applications also occurred on a small number of vessels, but were limited to a few motifs.

Many designs appearing on Lucre A and Lucre B vessels also appear on Killke style and other LIP vessels throughout the Cusco region, although different in composition and arrangement. Bands in red and black were the most common motif appearing on Lucre style vessels, and red bands were an especially frequent decoration along the rims of all vessel types. When appearing on the body of vessels, these bands often served as frames or dividers, between which other lines and designs could be painted. Straight, wavy, or zigzag lines were also frequent, often occurring in parallel. Various bands composed of geometric shapes, including diamonds, large triangles, and squares were often placed parallel to solid red or black bands on restricted jars and pitchers, either horizontally on the neck or on the interior of bands which created “frames” for further decoration. The shapes composing these bands were sometimes solid, but also included variations, such as concentric or interlocking shapes, or with dashes or dots in the center. Several restricted neck jars were decorated with large, solid pendent triangles descending from the rim. Long chains of diamonds or almond shapes,
sometimes with single dashes or dots in the center, also frequently occur on the surfaces of large jars and on the interiors of open bowls. Stick-figure camelids also occur on a small number of vessels.

Other compositions and motifs appearing on Lucre style vessels from Minaspata appeared to be derivative of those identified on some Wari style vessels in the Cusco region (Figure 6.18). Bands composed of two or three sets of dashes which alternate in orientation is common on many Lucre style vessels. Divided “wheels,” composed of a circle divided into four sections by lines (often meeting on a smaller circle in the center, sometimes with dots in each section) has been identified on some Lucre style vessels in the early LIP, as well as on Wari-related pottery from the site of Qolque Haycuchina (Glowacki 1996:726, Figure 88b). Several fragments of large jars were recovered featuring rows and columns of single, double or triple dashes. These designs were generally arranged in a large rectangular panel formed by black and/or red bands, and every other row of dashes included a weakly painted red band for contrast. Similar designs have been identified on Wari Viñaque style vessels from Pikillacta (Glowacki 1996:664, Figure 26; 712, Figure 74e). A frequent decorative technique on straight-necked restricted jars included a linear raised application with small incisions running vertically on opposite sides of the neck, forming a sort of braid-like design (Figure 6.19). Molded human faces often occurred between these vertical linear applications, although they also occurred on non-face-neck jars. This decoration has also been identified on a Wari Okros style face-neck jar from the site of Pikillacta (Glowacki 1996:688, Figure 50).
Figure 6.18. Lucre B pottery fragments from Minaspata juxtaposed with designs from Wari vessels.

A: Lucre style pottery fragments from Minaspata. B: Wari style pottery fragments from Minaspata. C: Wari style fragments recovered in the Lucre Basin (Glowacki 1996). Bowl exterior from Qolque Haychuchina (1996:726, Fig. 88b) (11); Viñaque style design (1996:664, Fig. 26) (12); Viñaque style rim from Pikillacta (1996:712, Fig. 74e) (13). Compare “rows of boxes with dashes” design (1, 2, 8, 9, 12, 13); “wheel” design (3, 4, 5, 11, Figure 6.10); “alternating dash” band (6, 7, 10).
One of the most diagnostic Lucre style motifs has been described by Chatfield as the “key” motif (2007:260) (Figure 6.20). At Minaspata, several variations occur, always on the exterior body of large restricted-neck jars and pitchers. This design seems unique to the Lucre style and has not been identified on Wari style pottery, although its placement in compositions and the use of a black painted outline suggests some Wari influence.

Face-neck jars, featuring molded human eyes, nose, and mouth on the front of the neck of jars and pitchers and decorated with painted designs, is a common feature of Wari style ceramic vessels during the Middle Horizon (Figure 6.21). These face-neck jars also in the Lucre style (Figure 6.22) (see McEwan et al. 2005:271, 2002:296 for an example from the site of Choquepukio). These molded faces appear exclusively on straight-necked jars and pitchers at Minaspata. These vessels are often decorated with
painted designs under the eyes (a black square with an X through the center is common), and in the Lucre style, tend to have prominent hook noses and small mouths, with parallel molded lips about the width of the nose. A U-shaped red band, outlined in black, often runs horizontally around the rim, descending on either side of the face; this shape may represent a helmet or headband covering the “ears” of the face-neck vessel. Variations on this typical form do exist, including those with a wider mouth, a lack of eyebrows, or a lack of paint.

Figure 6.20. Lucre style pottery fragments with "key" motif decorations (top), and illustrations of a few key motif designs found on fragments from Minaspata (bottom).
Figure 6.21. Wari style face-neck globular jars from the Museo de Antropología y Arqueología Hipólito Unanue in Ayacucho, Peru (photos taken by author).

Figure 6.22. Lucre style face-neck jar pottery fragments from Minaspata.
A few examples of a larger, globular face-neck jar with an unusually shaped neck was also recovered from late LIP phase contexts at Minaspata. The most complete example of this vessel had a bulbous, convex neck, rather than a straight or flaring neck (Figure 6.23). Vertical braid applications were present on either side of the face, with paint on the face and body of the vessel (including two large key motifs).

Figure 6.23. Lucre style face-neck jar from Minaspata with a convex neck.
Smaller Lucre style vessels overlap with similar types of vessels in the Killke style and earlier EIP pottery, but one or two larger size classes exist exclusively in the Lucre style. The largest examples of these vessels would have been difficult to move under normal circumstances, let alone when filled with food or liquid. These two classes may have been designed for personal use (smaller) and group serving and cooking (larger).

The high proportion of large and mid-sized restricted neck jars, the presence of several pitchers, and moderate frequency of drinking vessels suggest that the production and serving of chicha in large group contexts was a major feature of social life during the LIP at Minaspata. The prevalence of straight-sided, diverging open bowls suggests that the culinary locus of social life in the LIP was different from that of the EIP as well, oriented less towards liquid-based foods and more towards semi-dry cuisine, such as meat or boiled corn. While possibly a facet of social life during the EIP among small groups, feasting clearly played a more significant role on a larger scale during the LIP. Elements of the social practices suggested by Lucre style pottery at Minaspata can probably be traced back to large-scale feasting practices during the Middle Horizon, which was a significant aspect of Wari statecraft (e.g., Cook and Glowacki 2003; Moseley et al. 2005; Nash 2012; Nash and Williams 2005).

**Killke Style Pottery.** Because of the existence of multiple Killke-related styles across the Cusco region during the LIP, as well as the presence of Killke-related decorations on some Lucre A vessels, I have elected to use a relatively restricted
definition of Killke style pottery described above in classifying vessels from Minaspata (Bauer 1999; Bauer and Stanish 1990; Dwyer 1971a; Rowe 1944).  

Unrestricted Killke style vessels were far more common than restricted vessels, and for sherds which were identifiable to form, unrestricted vessels outnumbered restricted bowls, jars, and pitchers by an approximate ratio of 3.5 to 1. Of the four possible tumblers identified, none were rim sherds. Unrestricted bowls were the most common Killke style vessel form, composing 29% of the identifiable sherds analyzed (Figure 6.24). As elsewhere in the Cusco region, straight-sided divergent bowls decorated on the interior (tazones) composed the majority of open bowls at Minaspata, similar in size to Lucre style straight-sided bowls with an average rim diameter of 17 cm; these vessels ranged between 8 and 27 cm in size, but 43.5% were clustered between 14 and 17 cm in diameter, with a second, smaller clustering between 20-24 cm (24%).

Plates and shallow bowls were the second most common Killke style form, composing 18.1% of the identifiable sherds analyzed. These vessels were similar in size to the smallest class of Lucre style plates and ranged in rim diameter between 11 and 19 cm, with an average of 15 cm. However, no Killke style plate larger than 19 cm was identified at Minaspata.

However, we identified a small number (54 across all phases) of open straight-sided bowls during analysis that had characteristically Killke style designs which do not typically appear on Lucre style vessels – most commonly large, fine-lined reticulated pendant triangles descending from the rim on the interior of these types of bowls. These vessels were made with local, Lucre-type fabrics, sometimes with andesite temper inclusions visible in the broken profile. They were generally poorly made, with irregular and weakly-painted lines and carelessly applied red bands. I classified these vessels as a “Local Killke” category with the intention of resolving their classification later. These vessels seem to be indistinguishable in form and size from more standard Killke vessels, but due to the divergences in fabric from typical Killke style vessels, I have classified them as “LIP Unknown.”
A small number of flat-bottomed, incurving restricted bowls, a typical form of Killke style, were also identified at Minaspata. These vessels were typically decorated in black paint on the exterior of the curved vessel walls and ranged in rim diameter from 9 to 18 cm.

Only 11 Killke style rim sherds were identified as restricted jars or pitchers. Most of these vessels had slightly everted necks that were straight-sided or slightly outcurving. None appeared to be slipped or well-decorated, although a few demonstrated evidence of a dark red paint along the rim. These were slightly smaller on average than Lucre style restricted neck vessels, ranging between 9 and 18 cm with an average rim diameter of 12.5 cm, and all had direct rims.

Killke style vessels at Minaspata were predominantly fired in a fully oxidized environment (63.9%) and less than 9% were fully reduced. Oxidized pastes fired to a
light salmon-red (33.1%), red (32.3%), or orange (17.1%) paste, consistent with descriptions published elsewhere. Pastes were typically hard, with medium texture and moderate- to small-sized inclusions. Unslipped surface colors generally matched the paste color, although 24.8% of vessels were reddish brown on the exterior surface, suggesting a slight darkening occurred during firing.

Surfaces were generally smoothed or roughly burnished to a weak shine, with burnish marks sometimes still visible. 40.5% of vessels were slipped on the exterior and 28.2% were slipped on both sides. The most frequent slip color was a very pale buff brown, though this slip was inconsistent and sometimes appeared as light brown or reddish-yellow, probably due to firing conditions. Flat bottomed, incurring bowls were more likely to be slipped than open tazones, and decoration was generally higher quality on slipped vessels.

Decoration on the interior of straight-sided tazon bowls was applied in faded black or brown for geometric and rectilinear designs, and in red paint for bands, which were often bordered by one or two parallel black lines (Figure 6.25). Bands frequently descended from the rim vertically or diagonally towards the center of the bowl, and large, cross-hatched triangles (sometimes demarcated by a thicker black band) were a defining decorative aspect of this style. A variation on this cross-hatched triangle involved widely-spaced cross hatching of two or three fine, well-executed lines (the “Scotch plaid” design). Other motifs also occurred in this form, including wavy and straight parallel lines, bands of cross-hatched triangles or diamonds across the center of the vessel, and small repeated stick-figure camelids.
Flat bottomed incurving bowls were decorated with black paint in complex geometric bands in top and bottom registers along the exterior vessel walls (Figure 6.26). These complex bands involved geometric designs and solid rectangles, black lines, dots and thick dashes, bands of cross-hatched diamonds and triangles, and opposed solid triangles (forming a “bow-tie” pattern). These were recovered predominantly from late LIP and Late Horizon contexts and were made with pastes that were highly fired and fully oxidized, with decorations that were carefully executed. The stratigraphic positioning of these vessels, the quality of execution, and the type of motifs present suggest that these vessels appeared after 1300 CE and continued into the Late Horizon, and some examples of this vessel form may have been made with Inca fabric and firing technology.
On larger jars and pitchers, exterior decorations include solid red bands with and without black line borders, geometric bands and changes of diamonds (in red and black paint), red-and-black interlocking concentric triangles, parallel lines, and other designs published elsewhere.

Generally, the rectilinear designs and compositions on Killke style vessels from Minaspata are consistent with those found elsewhere in the Cusco region, and were probably obtained through interaction and exchange. The designs do seem to foretell the focus on complex geometric designs and patterns in later Inca style vessels, but the earlier examples at Minaspata tend to be less well-executed and elaborate. Vessel forms focus predominantly on the open straight-sided bowl form, which seems to suggest a concern less with serving liquids and more towards a combination of dry/wet foods, such as meat, boiled vegetables, or solid stews. Drinking vessels are rare; jars and pitchers are also infrequent and tend to be smaller than those of the Lucre style. The vessel sizes seem to suggest serving meant for small groups.

Figure 6.26. Killke style restricted incurring bowl pottery fragments from Minaspata.
Late Intermediate Period Ceramics at Minaspata. The Lucre style at Minaspata appears to begin as a Wari-influenced style with many technological traits shared with other LIP pottery throughout the Cusco region. Many vessel forms (particularly straight-necked restricted jars and pitchers) and decorations seem to be borrowed from Middle Horizon Wari style ceramics. However, Lucre style vessels are distinct in many ways, and the designs in particular give the impression of memories or partial imitations of Wari-related vessels by potters who lacked the embodied knowledge and resources necessary to produce higher-fidelity vessels. Notably, the complex ideologically charged images and painted human figures common to Wari style vessels are largely absent in Lucre style ceramics, and depictions of the “front-facing staff deity” disappear entirely, suggesting that at least part of the Wari cultural or religious ideology was abandoned even as others were maintained. The exception is the continued manufacture of face-neck vessels, although these may represent specific ancestors or historical elites and leaders rather than deities. Given that the site was largely abandoned during the Middle Horizon, and that Lucre style ceramics appear to be prevalent at the nearby site of Choquepukio, this partial imitation of aspects of Wari pottery design and production raises the question of who were the people that reoccupied Minaspata at the beginning of the Late Intermediate Period (Chapter 8).

Some evidence that interaction between the Cusco region and the Wari state during the Middle Horizon had lasting effects on ceramic production during the LIP on Killke style vessels. The use of thick red bands bordered by black lines is a common decoration on Araway/Wamanga style pottery, which was the principal Wari-related ware
produced and used by local communities during the Middle Horizon. Although absent in the Cusco regional ceramic assemblage in earlier periods these designs are common on Killke and Killke-related vessels during the LIP. Similarly, the open straight-sided *tazon* bowl form, so prevalent in Killke and other LIP assemblages, appears to have been the primary form of Araway/Wamanga style pottery (as well as other Wari styles, such as Okros). However, the geometric and rectilinear designs decorating most Killke vessels, painted in black and red colors on a light brown or buff-cream slip, is more reminiscent of Qotakalli style pottery. Qotakalli style pottery continues to be used in most of the Cusco region throughout the Middle Horizon, and Killke and Qotakalli style pottery appear to have been produced primarily in the Cusco Basin. This suggests that Killke style pottery may – at least in part – represent a continued but evolved tradition of Qotakalli style pottery, with elements drawn from Wari-related designs and wares (see also Bauer 1999; Bauer and Jones 2003). More research is needed to understand the relationships between the Killke, Araway/Wamanga, and Qotakalli styles, particularly on the chemical composition of LIP ceramics and the identification of clay sources, as well as petrographic analyses, to better understand paste treatment and processing.

While some overlap exists between the designs of Killke and Lucre style pottery early in the LIP, Killke influence appears to grow slightly over time, suggesting closer interaction between Minaspata and the larger region as the historical memory of Wari colonialism during the Middle Horizon fades. The ceramics recovered from Feature R-101 (Chapter 4), where a few thousand Lucre style ceramics (along with other LIP and a small number of Inca style vessels) were intentionally destroyed, burned, and buried with
a layer of large stones support this interpretation. This act was probably associated with the Inca conquest and “conversion” of Minaspata in the early part of the 15th century CE. A significant number of these vessels can be classified as Lucre A and were decorated predominantly with late Killke and Inca-like designs but on pale-yellow slipped vessels with characteristically Lucre vessel forms.

The most noteworthy change in the ceramic sequence at Minaspata during the LIP is the presence of large Lucre style vessels, the largest of which are significantly larger than similar Killke style vessel forms and seem to presage the large serving vessels of Cusco Inca style ceramics. The presence of crushed andesite temper in the fabric of some Lucre style vessels is also intriguing, as it is also a hallmark of Cusco Inca style ceramics. The use of andesite tempered fabric in both wares has been used to argue that while Killke remains best positioned as a stratigraphic and stylistic precursor to Inca pottery, Lucre style ceramics may have been a technological precursor (Ixer, Lunt, and Sillar 2014; Ixer, Lunt, Sillar, et al. 2014). Andesite has physical characteristics that make it technologically ideal for the production of the largest vessels in the Inca repertoire, and the large vessel forms and andesite tempered fabric used in Lucre and Inca style pottery suggest that this production technology may have been appropriated from Lucre Basin potters upon conquest.

**Late Horizon Ceramics of the Cusco Region**

One of the most distinctive and easily recognizable pottery styles in the Cusco region (and Andes in general) is the Late Horizon style of Cusco Inca (also sometimes
known as Classic Inca, Inca Polychrome, or Imperial Inca). Cusco Inca pottery, as used here, refers to Inca style pottery produced in state-controlled workshops located in the Cusco region, and following a standardized form and canon of designs and color schemes. The well-made Inca pottery can be found at nearly every Late Horizon component site in the region. Typically associated with the imperial phase of the Inca state, production is believed to begin ca. 1400 CE and lasts until shortly after the arrival of the Spanish in 1532 (Bauer 2004).\(^{126}\)

Cusco Inca polychrome ceramics appear suddenly as a fully formed ceramic style. The sudden appearance of these wares and the archaeological contexts in which they are found suggest that Cusco Inca pottery was a political artifact created by the Inca state for the benefit of the Inca elite and favored clients. Inca ceramics are highly recognizable, tightly standardized in technology, form, and design, and of excellent quality. Some variability in design and decoration exists within a tightly defined corpus of motifs and arrangements, favoring geometric and rectilinear decoration within a limited range of well-defined and standardized forms (Julien 1987; Miller 1987; Rowe 1944:48). The designs are fine and well-executed, precise and richly-textured, and the surfaces were highly burnished into a smooth, reflective finish. The marked contrast to earlier wares in the Cusco region suggests a high level of production control. Although Inca style ceramics have been reported associated with early radiocarbon dates elsewhere in the Andes (e.g., Marsh et al. 2017; Ogburn 2012; Pärssinen 2015), Cusco Inca ceramics

\(^{126}\) Other terms for this pottery – such as Classic Inca, Inca Polychrome, and Imperial Inca – may be used interchangeably to refer to state-produced, imperial phase Inca pottery located and/or produced outside of Cusco.
probably originated and were made in or around the capital city based on the quantity and unique shapes and designs.

Many of the world’s major museums obtained substantial collections of Cusco Inca style ceramics during the 19th and early 20th centuries (Bauer 1999:10). For example, Hiram Bingham’s discovery and excavation of Machu Picchu in the early 20th century resulted in (among other things) the first vessel typology for Inca pottery that formed the basis for the typology commonly used today (Bingham 1915). As a result of these early collections and excavations in Cusco in the first half of the 20th century, several early landmark reports on Inca ceramics were made (Pardo 1938, 1939, 1957; Rowe 1944:47–49; Valcárcel Vizquerra 1934, 1935). More recent studies in the Cuzco region (Alcina Franch et al. 1976; Kendall 1976, 1985; Lunt 1987; Julien 1987; Meyers 1975; Miller 1987) and from the various provinces of the Inca Empire have further contributed to our understanding of Cuzco Inca style ceramics. Because of the vast literature on Classic Inca style ceramics (see also Bray 2003c; Meyers 1975; Rowe 1944), I will not attempt a complete discussion here. Rather, I will simply identify a few key attributes of the style and briefly discuss the role that these ceramics likely played in the operation and development of the Inca Empire.

Despite the placement of Killke ceramics as a stylistic precursor, the Late Horizon Cusco Inca pottery style was a significant departure from earlier styles in decoration and execution of designs, and is highly innovative and developed as a technological and artistic product. Pastes are usually fired to a narrow range of orange-red colors, almost always fully oxidized, and are generally clean, containing mica and granite and with a
vast majority of Cusco Inca vessels tempered with crushed andesite (Ixer, Lunt, and Sillar 2014; Ixer and Lunt 1991; Lunt 1987). The surface was compacted, slipped in buff, white, black, or – most commonly – a deep red color, which was thickly and evenly applied. The surface was then usually burnished to a fine polish.

Unlike earlier styles whose design motifs were executed using thin, uneven slips, Cusco Inca style designs were usually carefully executed and applied evenly over the vessel. Designs and motifs represent a refinement and expansion over those found on Killke style ceramics, focusing primarily on geometric and linear designs and bands of various types. The quality and range of colors used in slips and decoration, the quality of execution and finishing, and the attention to repetition and symmetry is striking. Abstract, repeating animal forms (especially birds and camelids) occur but anthropomorphic figures are rare.

Forms in the imperial Inca style were highly standardized (Bray 2003c:12–13), although not all forms are represented at all sites or locations throughout the empire (Figure 6.27). These include a few forms of shallow bowls, plates with diagnostic bird and camelid effigy handles and scalloped rims, open-mouthed cooking pots (*ollas*), large wide-mouthed conical jars, short- and long-necked bottles, tumblers (known as *q’eros*), and large, restricted-neck jars known colloquially as *aribalos*. This last form, with its tall flaring neck, high pronounced shoulders, and conical base is the best known and most characteristic of Inca vessel forms. Most investigators assume it was used as a container for chicha, an interpretation supported by various morphological features of the vessel (Bray 2003c, 2008). The *aribalo* form is very common in different contexts throughout
the Inca Empire, and may have served as a material semiotic icon/index of the Inca ruler, thus enacting a real form of royal authority in the provinces (Bray 2018). Associated with the storage and serving of chicha, this form became a key material actant in state-sponsored feasts and rituals.

_Aribalos_ and some other forms of jars usually have vertical strap handles and a small stylized “nub” located on the front-facing shoulder of the vessel, which is often incised to resemble an abstract anthropomorphic or camelid head. This seems to serve as a replacement for modeled face-neck jars, which no longer occur in in the imperial Inca style. Some scholars have argued that the Inca _aribalo_ form has its roots in the Middle Horizon based on similarities in size, form, and decorative flourishes present on Wari oversized urns and jars (Cook and Glowacki 2003:193–194).

The timing of the appearance of high-quality Inca period pottery from the Cusco region, associated with the consolidation of the Cusco region, indicate that this political artifact was closely related to the beginnings of imperial expansion. Created intentionally as a political artifact as conscious strategy, this pottery style was designed specifically to aid in imperial expansion as a material embodiment of new systems of social hierarchy which were structured along gender and class difference. Bray (2003c:20–24) notes that food and feasting in the Andes has been considered critical to the consolidation of power, and that Inca vessel forms were broadly similar to existing culinary forms throughout the Andes, although stylistically different. Inca vessels would have supplanted local feasting patterns in particular context and in doing so, placed certain kinds of food preparation and consumption into an imperial framework of reciprocity and hierarchy.
Figure 6.27. Inca vessel form categories used in this study, after Meyers (1975) and Bray (2003:12-13).

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Cusco Inca ceramics also became the referent for later copying by potters working for the Inca state outside of the Cusco region (e.g., Hayashida 1999). These “Provincial Inca” wares mimicked Inca vessel form and decoration but were sometimes less well-executed, suggesting production by local potters who were less well-skilled. Cusco Inca style ceramics also formed a template for the production of local hybrid objects imitating and appropriating aspects of the Inca style (e.g., Costin 2016).127

Late Horizon Ceramics at Minaspata

Cusco Inca style ceramics constitute the largest class of pottery in Late Horizon contexts at Minaspata. Some Killke and Lucre style pottery continues to be found in Late Horizon contexts, although in smaller proportions than previously, and it is unclear to what extent this represents continued production or stratigraphic mixing near the surface.

Inca style ceramics are, almost without exception, highly fired to a hard paste and medium-textured with moderate to small inclusions. The fabric is generally clean, and then tempered with crushed black or dark bluish-gray inclusions that visually match descriptions of the andesite temper identified petrographically by Ixer and colleagues (Figure 6.28) (Ixer, Lunt, Sillar, et al. 2014; Ixer, Lunt, and Sillar 2014). Seventy percent

127 Provincial Inca – or, as it is sometimes called in the heartland, Inca-related (Quave 2012) – is the term generally used to designate ceramic vessels modeled and decorated in Inca style, but done with lower-quality execution or materials and sometimes different clays. Although a useful distinction at times, I have chosen not to use it as an analytical category for the Inca ceramics from Minaspata. This is because (a) it can be an indeterminate category, best summarized as “sherds that look Inca, but not quite,” and (b) because nearly all of the “Provincial Inca” or “Inca-Related” sherds identified at Minaspata were made of the same orange-red, andesite-tempered fabric that characterizes the vast majority of Cusco Inca style ware. I felt that quality of execution alone was insufficient to create a separate analytical category, nor particularly useful for the goals of the project.
of Inca sherds analyzed were fully oxidized, with less than 6% fully or partly reduced, and the remainder showing evidence of a mixture of oxidized and reduced firing environments. Over 85% of the analyzed sherds showed oxidized paste colors of red (48.70%), light red (29.12%), or reddish-orange (7.45%). In addition, only 15.6% of the analyzed Inca style sherds showed evidence of fire clouding – significantly lower than any previous time period, suggesting that Inca potters had reached a high level of control over the firing environment. The high quality and consistency of firing, paste treatment and tempering, and fabric color indicate significant advancements in firing and production technology which played a major role in forming this imperial ware.

Figure 6.28. Fabric of Inca style pottery fragment from Minaspata, showing crushed andesite temper in matrix. Image taken with a digital microscope at 75.5x magnification.
All Cusco Inca style fragments recovered from Minaspata that were analyzed conform to existing descriptions of decoration and vessel form (Figure 6.29). Rather than systematically discussing all aspects of this ware, the objective of the rest of the section is to discuss what vessel forms can be identified at Minaspata, and what this may say about how the existing population – now presumably laboring for the needs of the Inca state, alongside other groups of non-local workers – was understood and treated under imperial control. For the identification of Inca vessel forms, I use the typology of Albert Meyers (1975, cited in Bray 2003:12–13) (Figure 6.27, above).

Figure 6.29. Cusco Inca style pottery fragments from Minaspata.
Restricted vessels constitute 35.6% of identifiable vessel forms, while 59.2% were open vessels, a similar proportion to the LIP (the remainder was made up of specialized forms, such as lids or miniature pots). Most restricted vessels are composed of large or medium sized restricted jars, with a significantly smaller number of rims identified as pitchers. 18.3% of the restricted vessels, a significantly higher percentage than in earlier periods, were identified as *olla* cooking pots, many of which were decorated.

A number of these larger restricted jars could not be well identified: as the largest vessels, they were frequently fractured and decorated body sherds composed most of the recovered sample of Inca style vessels. However, analyzing the rims and rim diameters can provide some additional information. A majority of these vessels were clearly the distinctive *aribalo* form, with a conical base, wide body, vertical strap handles, and a narrow restricted neck that curved outward to end in a widely flaring rim. Others were more ambiguous, possibly representing the long-necked vase (Type 2) or the flaring-rim short-necked bottle (Type 5). Two rims recovered had vertical handles attached to the rim, suggesting pitchers with one or two handles (Type 3 or 6). One small rim with a curved neck of the Pacajes-Inca style associated with the Lake Titicaca Basin during the Late Horizon was probably the long-necked bottle form (Type 4). These vessels are associated with serving chicha.

A modal analysis of their rim diameters suggest they cluster into three groups, which likely represent different vessel types, but may also suggest distinct size classes within the same vessel type; the distribution of the most identifiable *aribalo* form across a
wide range of rim diameters suggest that both may be at play. The jars ranged from 10 to 44 cm in rim diameter, and averaged 23.4 cm with a median of 21 cm, but they tend to cluster around 15-16 cm, 19-21 cm, and again at 29-32 cm. However, the upper end tails off, with the largest restricted jar rim diameter at 44 cm wide.\textsuperscript{128}

Restricted incurving bowls are not a standard Inca pottery form, but \textit{ollas} were fairly well represented. These include the standard two handled bowl, with an everted, flaring rim (Type 11) and the more elaborated one-footed \textit{olla} (Type 10). The second is rarer and more difficult to identify using rim sherds, but a few examples of the characteristic pedestal base were recovered (usually broken off of the larger vessel). These \textit{ollas} were spread unevenly across a wide range, with rim diameters between 9 and 21 cm, but were most concentrated between 13-14 cm and 20-21 cm. These vessels would have frequently been used for cooking and used with lids; while only four lids were identified with rims intact, they range from 10-18 cm and are broadly consistent with the sizes of these restricted cooking pots.

The prevalence of open Inca style vessels at Minaspata represented a sharp departure from earlier periods, during which bowls dominated the ceramic assemblage: only 15.8\% of the identifiable unrestricted Inca vessels were bowls of various types. Drinking vessels constituted a full 25.1\% of unrestricted Inca vessels (most of the slightly flaring \textit{q’ero} form), marked increase from earlier periods. The most highly represented

\textsuperscript{128} The exaggerated flaring, outcurving nature of these rims overstate the size of the vessels somewhat, as the aperture of the neck is likely the more appropriate measurement as to size and functionality when comparing the sizes of these vessels across different styles. Thus, comparing the capacities of Inca style jars with straight-necked jars of the Lucre or Killke styles is difficult.
vessel type was the open, shallow plate form, frequently with a slightly curved shape. These represented 56.1% of the unrestricted Inca vessels identifiable to form.

Drinking vessels were generally highly decorated and slipped, with a sharply everted rim diverging from the direction of the vessel walls almost to a right angle. These vessels possess an average rim diameter of 11.7 cm, ranging from 7 to 18 cm. However, 50% of the sample ranged from 9-12 cm, with a long-tailed distribution slowly decreasing in quantity to the largest vessels. These largest q’eros would have required two hands to hold and drink, and were likely only used for special occasions.

Shallow plates had an average rim diameter of 17.4 cm and a median of 16 cm, with a few very large vessels. A few small plates (10-13 cm) were identified, but the majority (58.8%) of plates had rim diameters between 14 and 18 cm. The largest plate was 38 cm in diameter, but vessels over 23 cm were rare. The small number of sherds belonging to vessels identified as bowls mostly appeared to be straight-sided divergent bowls, which likely correlates to the two-handled casserole form (Form 12). However, a few had a slight curve to the body and were very open, and likely constituted a slightly deeper version of the standard plate form. These open bowl forms were slightly smaller in diameter than the shallow plates, but essentially followed the same pattern, ranging between 6 and 34 cm with clustering at 8 cm and 11-16 cm, and 19-20 cm, with two vessels possessing rim diameters larger than 20 cm.

Late Horizon Ceramic Styles at Minaspata. The imperial Inca ceramic corpus intimately linked the politics of state expansion and domination with the preparation, storage, and serving of food and chicha. These vessels were used as markers of Inca state
authority in the corporeal act of plying food and alcohol to the loyal subjects of the state in return for service and labor, entangling them in bonds of obligation and reciprocity with the state. They also metaphorically served as an extension of the royal personage, projecting the presence of the Inca ruler himself into the provincial districts throughout the empire whenever the state hosted and fed its subjects (Bray 2018).

In her survey of Inca pottery as culinary equipment throughout the empire, Bray notes that one way this political entanglement was enacted was in the differential distribution of vessel types and sizes between the provinces and the Inca heartland (Bray 2003c, 2008). The *aribalo* vessel form (Form 1), associated ethnographically and morphologically with the production, storage, transportation, and serving of chicha, constituted nearly half the vessels in her sample, indicating the critical role that chicha played in the politics of expansion. However, these vessels were far more common in the provincial sites than in the Cusco heartland, where they only composed 29% of the sample (Bray 2003c:17–18). The shallow plate (Form 10), the pedestal-based *olla* (Form 13), and the two-handed deep “casserole” pot (Form 11) were the next most common vessel types. These forms are respectively associated with the serving of semi-dry goods and meat, cooking maize-based meals in highly esteemed contexts, and serving or processing food meant to be easily accessed in prepared settings. Overall these four vessel forms accounted for 92% of the tabulated pots in her sample.

However, the two-handed deep pot was relatively rare in provincial assemblages, and the *aribalo*, the shallow plate, and the pedestal-based *olla* collectively composed the “minimum” assemblage of vessel forms at any site with significant Inca occupation. This
basic Inca ceramic suite contains both communal and individual service elements functionally adapted to the distribution of chicha, the consumption of meat, and the cooking or reheating of maize kernels or a maize-based stew (Bray 2003c:19–20). Other vessel forms, including the narrow-necked bottles and jars, wide-mouthed serving jars, round-based ollas, and two-handled deep bowls, and cups were more rarely recovered, and were more commonly distributed in heartland sites from the Cusco region. This suggests that other vessel types were identified more closely with the serving and production of food for Inca elites and their retinues, as their size and morphology indicate functions related to cooking, storing, or processing unfermented chicha, and serving food and drink to small groups of individuals.

The distribution of vessel forms at Minapsata is, as would be expected, composed predominantly of shallow plates, restricted neck jars (mostly aribalos), and olla cooking pots (Forms 10 and 11). A small number of shallow two-handled casserole bowls (Form 12) were recovered as well. However, aribalos form a surprisingly small component of the overall Inca assemblage, and are outnumbered by open plates by a ratio of 2-2.5: 1. A small number of other, rarer vessel forms associated with serving chicha to small groups or single individuals (Forms 2-6), preparing chicha (Form 8), or other food (Form 11) were also recovered. Drinking keros formed a significant part of the assemblage; these types of vessels appear to be rarely found in provincial contexts (ibid: 19) and were probably restricted to specific elite or ritual contexts. Together, this data suggests a

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129 Cusco region sites examined in Bray’s survey of Inca style ceramic forms included Sacsayhuaman, Cusco, Ollantaytambo, Chinchero, Machu Picchu, and Choquepukio.
pattern more common to heartland Inca sites, and that Minaspata was not treated as a provincial territory.

Vessel size is also important for understanding state and imperial objectives. Aribalos in Bray’s sample (2008) ranged from miniature vessels less than 5 cm in rim diameter, to extremely large vessels nearly 40 cm in rim diameter. These vessel sizes were continuously distributed, although a dominant mode was observed between 5 and 9 cm, with a mean rim diameter of 10 cm, and a long tail at the larger end of the spectrum. Small aribalos, ranging 5-10 cm in rim diameter, were more common in the heartland sites, as were extremely large vessels over 30 cm in rim diameter. The former was more commonly associated with burials in the Cusco region and may have constituted the normative size for offerings to the dead, while the largest class seems to have been intended principally for special state occasions, such as coronations and religious ceremonies conducted in the imperial capital, involving huge groups of people. On the other hand, medium (10-17 cm in rim diameter) and large aribalo vessels (18-30 cm in rim diameter) were significantly more common in the provinces. These size classes may have constituted “standard” sized batches of chicha used in group feasting and state politics in provincial districts.

The majority of aribalo vessels recovered at Minaspata fit into the medium (41.6%) and large (33.3%) size classes, with the remainder composed of extremely large vessels ranging in rim diameter from 30 to 44 cm. No vessels recovered from Minaspata fell into the small vessel class. These data suggest that Minaspata may have

130 As discussed above, a few extremely large vessels represented only by the rim may have been large, wide-mouthed aribalos (Form 8) intended for processing and storing unfermented chicha.
been included in large ceremonies on state occasions, but was also involved in state practices more common to the provinces, most likely intended to create bonds of reciprocity and obligation between the state and its incorporated subject populations.

These contradictory data may be reconciled in two ways. Ethnohistoric (Chapter 3) and archaeological (Chapter 4) evidence from Minaspata indicate that the ethnic groups of the Lucre Basin were resistant to the growing Inca state, and were forcibly conquered ca. 1400 CE. The process of converting Minaspata into a heartland “Inca” site began almost immediately, and probably continued for several decades. In the final years of the Inca empire, Huascar (the final Inca ruler to be supported on the throne by the Cusco elite) compulsorily relocated the local Muina from Minaspata to construct a royal estate. This effort was only partially realized before he was defeated in a civil war by his half-brother Atahualpa, shortly before the Spanish arrived in 1532.

The first possibility is that Minaspata (and the people who lived there) were treated as a heartland Inca site and a provincial site. Given the apparently violent nature of the incorporation of the Lucre Basin into the heartland, the Inca state may have initially been concerned with integrating the Muina into the empire as subjects, focused on creating bonds of obligation with the state through feasting, and situating the state as the primary supplier of chicha and food for the local population. At the same time, mindful of its geographic location within the bounds of the Inca heartland, the people of Minaspata may have intentionally been included in large political, religious, and commemorative ceremonies, and made subject to frequent visits by Inca elites and their
retinues, as an attempt to gradually erase the sociocultural bonds historically separating the Muina from their new lives as participating subjects of the Inca state.

The second possibility is that Minaspata was initially treated as a conquered province, but that this changed when the project to convert the settlement into a royal estate began. In this scenario, the components of the ceramic assemblage more closely resembling patterns for Inca heartland sites (Bray 2003c, 2008) are a result of this later phase, and actually represent the presence of Inca elite. However, the lack of stratigraphic precision in Late Horizon contexts near the surface at Minaspata makes this hypothetical chronological relationship difficult to assess.

Conclusion

Several patterns are revealed through an analysis of the ceramic assemblage at Minaspata. The ceramic vessels of the Early Intermediate Period suggest new practices are introduced to the Cusco region, as well as new forms. These practices appear to be focused on small-scale feasting, representing a marked change from the earlier Formative Period. The regional ceramic patterns indicate that Minaspata is an active participating member of the larger regional community, interacting through the mediation of Qotakalli style ceramics. This changes, however, when the site is abandoned during the Middle Horizon.

The Lucre ceramic style during the Late Intermediate Period reveals a notable Wari influence, evident in the form, size, and decoration of these ceramics. This influence also appears to extend to sociopolitical practices mediated by these vessels, as
an emphasis on larger-scale, community wide feasting emerges towards the middle of the LIP. In contrast to the patterns observed in the EIP, however, the Lucre ceramic style is distinct from the Killke style predominant throughout the rest of the region, suggesting processes operating to territorialize local communities and hardening their boundaries. The Wari influence on Lucre style ceramics seems to erode slightly as the LIP progresses, however, indicating that the processes of localization are being undermined by interaction with other communities across the region through exchange. Minaspata was being drawn more closely into the regional sociocultural and material interaction sphere, even as the Pinagua and Muina resisted political integration into the growing Inca state. However, once this integration finally occurred, Inca practices of sovereignty seems to have focused on converting the site and its people through material engagement, as the Late Horizon ceramic assemblage suggests that the Muina were treated as both semi-provincial subjects, and members of the heartland.
CHAPTER 7

FOOD CONSUMPTION PATTERNS AT MINASPATA: MACROBOTANICAL AND FAUNAL ASSEMBLAGES

Although consumption practices can be documented from the identification of patterns in the ceramic assemblages in archaeological contexts, a direct examination of the food remains can be more productive. In this chapter, I address food procurement, preparation, and consumption through the analysis of the macrobotanical and faunal remains recovered from Minaspata during the 2013 excavation season. This data can be used to explore changes in food consumption practices through time. The identification of patterns and ruptures of these practices may be correlated with other changes in the ceramic assemblage and in the cultural sequence at Minaspata to examine the reasons behind them. On the other hand, a lack of changes in food consumption patterns through periods of social transformation may point to the stability of longstanding traditional practices.

While some macrobotanical remains were identified through screening and hand recovery of excavated contexts in the field, the majority of this data comes from flotation. Bulk sediment samples were systematically collected and floated from all soil-bearing contexts excavated in Unit II-Ext and Unit IV-Ext. The light fraction of all floated sediment samples were sent to the ArqueoBios Centro de Investigaciones

131 Sediment samples for flotation were not collected for the initial test excavations, which include Unit I, Unit III, Unit III-B, or Unit V. We attempted to take a standardized sediment sample of 10 L from all contexts, although some of these contexts contained less than 10 L of sediment. In addition, some samples only contained ca. 9 L when artifacts and stones were removed prior to flotation. These variations in sample sizes were taken into consideration during analysis.
Arqueobiológicas y Paleoecológicas Andinas, a laboratory and research center located in Trujillo, where the macrobotanical specimens were identified and quantified by Víctor Vásquez and his team. These remains were analyzed by context but have been combined and presented by chronological phase site-wide (see below). Due to the limited amount of horizontal excavation conducted, only small quantities of different plant taxa recovered for some contexts, limiting the interpretation. In addition, this dissertation is primarily concerned with the changes in frequencies, ubiquity, and density of plant remains over time, and a site-wide chronological comparison is best suited for this type of analysis.

Faunal remains, in the form of animal bones and fragments recovered from stratified archaeological contexts, were collected from all excavated units. After sorting, the faunal remains were inventoried into Special Artifact (AE) and General Artifact (GE) categories. The latter category comprised of highly fractured faunal remains which were too fragmentary to identify to either taxon or element. These were sorted according to bone type (rib bone fragments, long bone fragments, indeterminate mammal bones, etc.), counted, weighed, and were not analyzed further. The AE faunal remains were identified to taxon and element as part of the inventory process, and approximately 60% of the AE artifacts were further analyzed on a variety of developmental and taphonomic attributes (Chapter 2). Only some of this data will be discussed below.

Macrobotanical evidence for diet and cuisine at Minaspata

A total of 1173 liters of bulk sediment from 139 samples were floated from archaeological contexts over all time periods ranging from the Late Formative Period to
the Late Horizon. One hundred and twenty nine of these samples were sent to ArqueoBios for identification and quantification. The total number of macrobotanical remains recovered was small; only 270 individual plant specimens were recovered through flotation. Of these, 54 specimens (20%) were unidentifiable carbon or vegetal remains.132

A number of factors may bias the observable results, most notably the small sample size and limited scale of the excavations, which may create the appearance of total absence of poorly represented or preserved plant remains from some phases. In addition, the natural preservation of organic plant remains is poor in the seasonally wet Andean highlands and only carbonized plant remains will be preserved under normal circumstances. Cultural factors are therefore an issue, including typical cooking practices (boiled vegetable matter is unlikely to carbonize and is thus less likely to be preserved) and the locations food preparation and consumption (for example, if food consumption or preparation typically occurred in areas outside of excavation units, few macrobotanical remains may be recovered, and vice versa). Despite these potential biases, considerable insight can still be gained from examining the recovered macrobotanical remains at Minaspata.

Of these specimens recovered from bulk sediment samples at Minaspata, two taxa were identifiable to species level, four to genus level and two to family level, although one species and family may overlap (see below).

132 These unidentifiable specimens are reported on the NISP quantity chart below to indicate relative degree of preservation for each phase, but are not included in the subsequent presentation of ubiquity and density, as these would bias the proportions of identified specimens.
• *Zea mays* – domesticated maize.

• *Phaseolus vulgarus* – common bean. Several wild and domesticated subspecies are native to the Andean highlands, although no attempt was made to differentiate between them.

• *Plantago sp.* – a genus of about 200 species of small herbaceous plants commonly called plaintains or fleaworts. Although endemic to many regions, *Plantago sp.* is commonly used across the world as herbal remedies. The herb is astringent, anti-toxic, antimicrobial, anti-histamine, and anti-inflammatory.

• *Salvia sp.* – one of several genera within the mint family (Lamiaceae) commonly referred to as sage, including the widely produced herb used in cooking.

• *Potamogeton sp.* – a genus of aquatic freshwater plants known by the common name pondweed.

• *Typha sp.* – a genus of about 30 species commonly known as bulrushes or cattails; only a few of the species in this genus appear to be native to South America. This plant also makes excellent roofing material in traditional domestic structures.

• *Cyperaceae* – a family of flowering plants known as sedges frequently associated with wetlands. The totora reed (*Schoenoplectus californicus* subsp. *tatora*), the source material for reed boats made in Andean highland communities (most famously at Lake Titicaca), is in the Cyperaceae family. This plant is also an important raw material for roofing and mats, and the roots are edible.
• *Fabaceae* – a family commonly known as the legume, pea, or bean family.

*Phaseolus vulgaris* is in the Fabaceae family, and the presence of this family at Minaspata may include that species.

Of these plants, only *Zea mays* and *Phaseolus vulgaris* (and, possibly, Fabaceae) are staple foods in the Andes. *Plantago sp.* and *Salvia sp.*, while not plants that would have served as important crops, may have nonetheless been brought to the site intentionally for cultural use. *Salvia sp.* is commonly known as sage; wild sage is native to the Cusco region and much of the south-central highlands, and may have been used as a food additive for flavoring. *Plantago sp.* is commonly used for medicinal purposes in traditional communities worldwide.

*Potamogeton sp.* and *Typha sp.* are plants with unknown uses common to wetland areas and were found in contexts near the surface. The location of Minaspata, adjacent to the edge of Lake Muina, probably explains the presence of these in near-surface archaeological contexts, and they may have been deposited on the surface by local activity after the abandonment of the site and moved through the top layer of soil through post-depositional weather-related processes. The Cyperaceae family is also related to wetland environments, but includes the totora reed, which is an important plant in the highlands that is used to make reed boats. Reeds resembling totora can be seen growing along the shores of Lake Muina.

Analysis of these remains includes measures of frequency (raw counts and percentages) (Table 7.1), ubiquity (percentage presence) (Table 7.2), and density (per
liter of sediment floated) (Table 7.3), based on the number of identifiable specimens (NISP) of fragmented and whole samples. This data provides information on overall processing and consumption of plants at Minaspata, as well as chronological differences and patterns.

Maize constitutes the largest portion of the macrobotanical sample, and is present in contexts from nearly all chronological phases, with the exception of the Terminal EIP/Middle Horizon transitional phase (Table 7.1).\textsuperscript{133} The EIP/MH transitional phase represents the least well sampled of all phases, with only 52.5 liters of floated bulk sediment (4.65% of the total amount floated); thus, a relative absence of botanical remains during this phase is unsurprising. Quantities of maize seem to increase each phase from the Late Formative Period to the Mid-EIP, only to temporarily disappear. Maize reappears at the beginning of the Early LIP phase, and continues to increase substantially throughout the LIP and Late Horizon until the site is abandoned. However, this observed trend may be partly a result of sample bias inherent in the raw NISP count, as the amount of bulk sediment floated in each period follows a similar trend (addressed below with measures of specimen density).

\textsuperscript{133} This phase combines contexts from the terminal EIP phase and the few small contexts dating to the Middle Horizon, all of which are from Unit II-Ext.
<table>
<thead>
<tr>
<th>FLORA (NISP)</th>
<th>Common Name</th>
<th>Late Formative</th>
<th>Late LF/Early EIP</th>
<th>Early EIP</th>
<th>Mid EIP</th>
<th>Late EIP</th>
<th>Late EIP/MH</th>
<th>Early LIP</th>
<th>Mid LIP</th>
<th>Late LIP</th>
<th>Late Horizon</th>
<th>Mixed/Colonial</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zea mays</td>
<td>Maize</td>
<td>1</td>
<td>2</td>
<td>9</td>
<td>12</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>11</td>
<td>64</td>
<td>1</td>
<td>106</td>
<td>39.3%</td>
</tr>
<tr>
<td>Phaseolus vulgaris</td>
<td>Common bean</td>
<td>1</td>
<td>9</td>
<td>1</td>
<td>1</td>
<td></td>
<td>6</td>
<td>1</td>
<td></td>
<td></td>
<td>19</td>
<td>7.0%</td>
<td></td>
</tr>
<tr>
<td>Salvia sp.</td>
<td>Sage (herb)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>0.4%</td>
<td></td>
</tr>
<tr>
<td>Plantago sp.</td>
<td>Fleawort</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
<td>0.4%</td>
<td></td>
</tr>
<tr>
<td>Potamogeton sp.</td>
<td>Pondweed</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>83</td>
<td></td>
<td></td>
<td>84</td>
<td>31.1%</td>
<td></td>
</tr>
<tr>
<td>Typha sp.</td>
<td>Cattail</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>0.4%</td>
<td></td>
</tr>
<tr>
<td>CYPERACEAE</td>
<td>Sedge (Fam.)</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>1.1%</td>
<td></td>
</tr>
<tr>
<td>FABACEAE</td>
<td>Legume (Fam.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>0.4%</td>
<td></td>
</tr>
<tr>
<td>Carbon N/I</td>
<td></td>
<td>3</td>
<td>5</td>
<td>6</td>
<td>5</td>
<td></td>
<td></td>
<td>6</td>
<td>4</td>
<td>12</td>
<td>6</td>
<td>53</td>
<td>19.6%</td>
</tr>
<tr>
<td>Vegetal N/I</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>0.4%</td>
<td></td>
</tr>
<tr>
<td>Total # Specimens</td>
<td></td>
<td>6</td>
<td>6</td>
<td>12</td>
<td>18</td>
<td>9</td>
<td>6</td>
<td>10</td>
<td>13</td>
<td>8</td>
<td>34</td>
<td>7</td>
<td>129</td>
</tr>
</tbody>
</table>

Table 7.1: Raw quantities and percentages by NISP, organized by chronological phase.
The common bean *Phaseolus vulgaris* also forms a longstanding component of the traditional highland diet, and the NISP quantities from Table 7.1 indicate that beans appear in contexts at Minaspata as early as the Late Formative Period phase, albeit in smaller quantities than maize. *Phaseolus vulgaris* appears intermittently, either as a single specimen or absent entirely in all phases except for the Early EIP and Late Horizon where it appears in larger quantities. Preservation or sample size issues may have contributed to the lack of frequency for *Phaseolus vulgaris*; although probably forming a smaller component of the diet at Minaspata in most phases than does maize, the possibility that it disappears from food consumption practices intermittently is highly unlikely.

The differences in taxa frequencies may not be totally accounted for by sample size, however. The ubiquity measures help to illustrate how widespread each taxon was within a single phase (Table 7.2). Ubiquity (percentage presence) is a measure of the importance of food remains, and is determined by dividing the number of samples in which each taxon appears at least once by the total number of samples collected (VanDerwarker 2010) For example, during the Late EIP phase, *Zea mays* is found in one out of nine total samples collected, so the ubiquity measurement is $1/9 = 11.1\%$.

The ubiquity measures demonstrate which taxa appeared in few contexts and which appeared in many. This can help remove biases of inflated quantities when high numbers of botanical specimens appeared in a single context, but is most appropriate for when all contexts excavated are approximately the same size, and multiple small contexts within a single phase may understate the actual prevalence of a given taxon.
Table 7.2 - Ubiquity measures by chronological phase.

<table>
<thead>
<tr>
<th>FLORA (Ubiquity)</th>
<th>Common Name</th>
<th>Late Formative</th>
<th>Late LF/ Early EIP</th>
<th>Early EIP</th>
<th>Mid EIP</th>
<th>Late EIP</th>
<th>Late EIP/ MH</th>
<th>Early LIP</th>
<th>Mid LIP</th>
<th>Late LIP</th>
<th>Late Horizon</th>
<th>Mixed/ Colonial</th>
<th>Ubiquity of Taxa for All Phases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Samples</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Floated</td>
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<td>12</td>
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<td>6</td>
<td>10</td>
<td>13</td>
<td>8</td>
<td>34</td>
<td>7</td>
<td>129</td>
</tr>
<tr>
<td>Zea mays</td>
<td>Maize</td>
<td>16.7%</td>
<td>33.3%</td>
<td>33.3%</td>
<td>33.3%</td>
<td>11.1%</td>
<td>10.0%</td>
<td>23.1%</td>
<td>25.0%</td>
<td>26.5%</td>
<td>14.3%</td>
<td>23.26%</td>
<td></td>
</tr>
<tr>
<td>Phaseolus</td>
<td>Common bean</td>
<td>16.7%</td>
<td>16.7%</td>
<td>5.6%</td>
<td></td>
<td></td>
<td>10.0%</td>
<td></td>
<td>14.7%</td>
<td>14.3%</td>
<td>8.53%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>vulgaris</td>
<td>Sage (herb)</td>
<td>16.7%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10.0%</td>
<td></td>
<td></td>
<td></td>
<td>0.78%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salvia sp.</td>
<td></td>
<td>16.7%</td>
<td>16.7%</td>
<td>5.6%</td>
<td></td>
<td></td>
<td>10.0%</td>
<td></td>
<td></td>
<td></td>
<td>0.78%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plantago sp.</td>
<td>Fleawort</td>
<td>16.7%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10.0%</td>
<td></td>
<td></td>
<td></td>
<td>0.78%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potamogeton</td>
<td>Pondweed</td>
<td>16.7%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10.0%</td>
<td></td>
<td></td>
<td></td>
<td>0.78%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>sp.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.78%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Typha sp.</td>
<td>Cattail</td>
<td>16.7%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10.0%</td>
<td></td>
<td></td>
<td></td>
<td>14.3%</td>
<td>0.78%</td>
<td></td>
</tr>
<tr>
<td>Sedge (Fam.)</td>
<td></td>
<td>16.7%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10.0%</td>
<td></td>
<td></td>
<td></td>
<td>14.3%</td>
<td>2.33%</td>
<td></td>
</tr>
<tr>
<td>CYPERACEAE</td>
<td></td>
<td>16.7%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10.0%</td>
<td></td>
<td></td>
<td></td>
<td>14.3%</td>
<td>2.33%</td>
<td></td>
</tr>
<tr>
<td>Legume (Fam.)</td>
<td></td>
<td>16.7%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10.0%</td>
<td></td>
<td></td>
<td></td>
<td>14.3%</td>
<td>2.33%</td>
<td></td>
</tr>
<tr>
<td>FABACEAE</td>
<td></td>
<td>16.7%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10.0%</td>
<td></td>
<td></td>
<td></td>
<td>14.3%</td>
<td>2.33%</td>
<td></td>
</tr>
<tr>
<td>Carbon N/I</td>
<td></td>
<td>16.7%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10.0%</td>
<td></td>
<td></td>
<td></td>
<td>14.3%</td>
<td>2.33%</td>
<td></td>
</tr>
<tr>
<td>Vegetal N/I</td>
<td></td>
<td>16.7%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10.0%</td>
<td></td>
<td></td>
<td></td>
<td>14.3%</td>
<td>2.33%</td>
<td></td>
</tr>
</tbody>
</table>
In these measures, maize appears to be more evenly ubiquitous during the EIP then indicated by the NISP raw frequency counts, until the Late EIP phase. The increase in frequency observed by the NISP counts for the Late Intermediate Period and Late Horizon phases is absent when the ubiquity measures are considered, as maize consistently constitutes between 23 and 27% of the sample through the LIP and LH phases. Beans are better represented as an important part of the diet when compared to maize: when including the Fabaceae category (which probably represents a specimen of *Phaseolus vulgaris* which was too fragmentary to identify to genus), beans appear as a small but consistent part of the diet during the EIP and early LIP phases, only to disappear for a time during the Mid and Late LIP. Although possibly the result of sampling bias, beans may have become a less important food resource for the people of Minaspata during these phases.

Density measures take into consideration the total amount of bulk sediment floated for each time period when examining the occurrence of each taxon. This measure is calculated by dividing the NISP count for each taxon by the total amount of liters floated. As a result, density measures present a more standardized and comparable quantification of how the frequency of each taxon changes through time than does the raw NISP count.
### Table 7.3: Density Measures for Each Taxon by Chronological Phase

The table below presents density measures for each taxon by chronological phase, including total volume floated. The density values for each phase are multiplied by 100 to make them more understandable.

<table>
<thead>
<tr>
<th>Taxon</th>
<th>Common Name</th>
<th>Late Formative</th>
<th>Late LF/Early EIP</th>
<th>Early EIP</th>
<th>Mid EIP</th>
<th>Late EIP</th>
<th>Late EIP/MH</th>
<th>Early LIP</th>
<th>Mid LIP</th>
<th>Late LIP</th>
<th>Late Horizon</th>
<th>Mixed/Colonial</th>
<th>Total Density</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FLORA (Density)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Volume Floated (L)</strong></td>
<td></td>
<td>50</td>
<td>58</td>
<td>117.5</td>
<td>170</td>
<td>83</td>
<td>52.5</td>
<td>83.5</td>
<td>123.5</td>
<td>70</td>
<td>310.5</td>
<td>54.5</td>
<td>1173</td>
</tr>
<tr>
<td><em>Zea mays</em></td>
<td>Maize</td>
<td>2.0</td>
<td>3.4</td>
<td>7.7</td>
<td>7.1</td>
<td>2.4</td>
<td>0.0</td>
<td>1.2</td>
<td>4.9</td>
<td>15.7</td>
<td>20.6</td>
<td>1.8</td>
<td>5.69</td>
</tr>
<tr>
<td><em>Phaseolus vulgaris</em></td>
<td>Common bean</td>
<td>2.0</td>
<td>0.0</td>
<td>7.7</td>
<td>0.6</td>
<td>0.0</td>
<td>0.0</td>
<td>1.2</td>
<td>0.0</td>
<td>0.0</td>
<td>1.9</td>
<td>1.8</td>
<td>1.30</td>
</tr>
<tr>
<td><em>Salvia sp.</em></td>
<td>Sage (herb)</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>1.2</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.10</td>
</tr>
<tr>
<td><em>Plantago sp.</em></td>
<td>Fleawort</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.3</td>
<td>0.0</td>
<td>0.03</td>
</tr>
<tr>
<td><em>Potamogeton sp.</em></td>
<td>Pondweed</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.8</td>
<td>0.0</td>
<td>0.0</td>
<td>26.7</td>
<td>0.0</td>
<td>2.28</td>
</tr>
<tr>
<td><em>Typha sp.</em></td>
<td>Cattail</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>1.8</td>
<td>1.8</td>
<td>0.23</td>
</tr>
<tr>
<td><strong>CYPARACEAE</strong></td>
<td>Sedge (Fam.)</td>
<td>2.0</td>
<td>0.0</td>
<td>0.9</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>1.8</td>
<td>0.40</td>
</tr>
<tr>
<td><strong>FABACEAE</strong></td>
<td>Legume (Fam.)</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>1.9</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.16</td>
</tr>
<tr>
<td><strong>Carbon N/I</strong></td>
<td></td>
<td>6.0</td>
<td>8.6</td>
<td>5.1</td>
<td>3.5</td>
<td>6.0</td>
<td>0.0</td>
<td>0.0</td>
<td>5.7</td>
<td>3.9</td>
<td>11.0</td>
<td>4.25</td>
<td></td>
</tr>
<tr>
<td><strong>Vegetal N/I</strong></td>
<td></td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>2.4</td>
<td>0.0</td>
<td>0.3</td>
<td>0.0</td>
<td>0.0</td>
<td>0.23</td>
<td></td>
</tr>
</tbody>
</table>
Unsurprisingly, the density measures also show that maize dominates the overall macrobotanical assemblage. Maize and beans are more evenly represented in the Late Formative Period and Early EIP contexts, but maize seems to form a more important component of the diet in the Mid EIP and Late EIP phases (potential sample bias notwithstanding). The relationship between maize and beans seems to “reset” after the Middle Horizon, as these two domesticated crops again appear in equal densities in the Early LIP phase. However, the importance of maize in the archaeological record at Minaspata increases significantly in the Mid LIP phase and again in the Late LIP, reaching a density twenty times that of the Early LIP phase.

While these three analytical measures (NISP, Ubiquity, and Density) reveal different aspects of the macrobotanical assemblage at Minaspata, together they show a heightened importance of maize during the EIP as compared to the Late Formative phase.\(^\text{134}\) This pattern seems to be interrupted by the temporary abandonment of the settlement during the Middle Horizon, and maize once again returns to a relatively low importance during the Early LIP phase, roughly even to that of beans. However, the pattern quickly changes, and the importance of maize seems to ascend to even greater levels than in earlier periods.

The representation of *Phaseolus vulgaris*, on the other hand, stays at a consistently low level, occasionally disappearing from the archaeological record altogether at various points. This disappearance is probably due to the small size of

\(^\text{134}\) The decrease in frequency, ubiquity, and density of maize during the Late EIP may be due to sample bias rather than an actual decrease in the importance of maize, as the number of liters floated during this phase is less than half that for the previous phase.
collected and floated samples rather than the total absence of consumption during these phases.

Macrobotanical remains were also recovered from dry screening and excavated contexts, although these were not systematically analyzed. Seventy-two carbonized maize kernels from 61 different samples comprise the vast majority of this collection, as their large size and distinct form made them easily recognizable during excavation.\textsuperscript{135}

<table>
<thead>
<tr>
<th>Approximate Chronology</th>
<th>Coca</th>
<th>Maize</th>
<th># Contexts</th>
<th>Maize/Contexts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid/Late Formative</td>
<td>1</td>
<td>1</td>
<td>13</td>
<td>7.7%</td>
</tr>
<tr>
<td>Late Formative</td>
<td>1</td>
<td>7</td>
<td>38</td>
<td>18.4%</td>
</tr>
<tr>
<td>LF/EIP Transitional</td>
<td>2</td>
<td>24</td>
<td>38</td>
<td>8.3%</td>
</tr>
<tr>
<td>Early EIP</td>
<td>1</td>
<td>1</td>
<td>27</td>
<td>3.7%</td>
</tr>
<tr>
<td>Mid EIP</td>
<td>1</td>
<td>34</td>
<td>38</td>
<td>2.9%</td>
</tr>
<tr>
<td>Late EIP</td>
<td>1</td>
<td>36</td>
<td>38</td>
<td>2.8%</td>
</tr>
<tr>
<td>EIP/MH Transitional</td>
<td>0</td>
<td>8</td>
<td>10</td>
<td>0.0%</td>
</tr>
<tr>
<td>Early LIP</td>
<td>2</td>
<td>19</td>
<td>12</td>
<td>10.5%</td>
</tr>
<tr>
<td>Mid LIP</td>
<td>2</td>
<td>17</td>
<td>12</td>
<td>11.8%</td>
</tr>
<tr>
<td>Late LIP</td>
<td>7</td>
<td>12</td>
<td>12</td>
<td>58.3%</td>
</tr>
<tr>
<td>Inca/Late LIP</td>
<td>47</td>
<td>75</td>
<td>60</td>
<td>62.7%</td>
</tr>
<tr>
<td>Mixed; Colonial</td>
<td>1</td>
<td>13</td>
<td>13</td>
<td>7.7%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>2</td>
<td>72</td>
<td>86</td>
<td>7.7%</td>
</tr>
</tbody>
</table>

Table 7.4 – Carbonized maize kernels recovered in excavation, organized by phase and with ratios determined by dividing the number of kernels by the total number of excavated contexts in each phase.

Since these macrobotanical remains were recovered opportunistically as they were identified, sample bias is even a greater concern than for botanical remains.

\textsuperscript{135} A small number (27 across all contexts) of other botanical remains were also recovered through screening and hand recovery during excavations, mostly consisting of unidentified roots and a few seeds. These were not analyzed and are not discussed further here.
recovered through systematic bulk sediment flotation. As a result, attempting to identify trends through time is problematic. However, examining the frequency of these remains through time may provide insight on food preparation practices. Today, maize is consumed boiled, parched, toasted, ground into various forms, popped, and malted and brewed into chicha, as in the Inca period (Gade 1975:126-127). Maize kernels are generally only preserved in archaeological contexts when carbonized, which requires direct exposure to fire. Maize that was consumed boiled, parched, ground, or brewed would not generally be directly exposed to fire as part of the preparation process (although small amounts may have been spilled into a cooking fire during processing and carbonized). This means that substantially higher rates of carbonized maize preserved in the archaeological record for certain phases may suggest changes in the maize preparation, cooking, and consumption practices.

When standardized for the number of excavated contexts in each phase, relatively low rates of carbonized maize were recovered for all time periods until the Late LIP and Late Horizon phases (Table 7.4). Due to the prevalence of open vessels such as shallow bowls and plates which appear in Inca style pottery assemblages, a shift away from consuming maize predominantly in traditional manner – such as boiling in stew or ground up and used in other cooking – and towards a greater emphasis on consuming toasted or popped maize is suggested. The beginning of Inca occupation of the Lucre Basin at the start of the Late Horizon phase may have provided some of the impetus for this shift, as the imperial objectives and strategies of the Inca state would doubtlessly
affect the availability and preparation of various foodstuffs. However, these trends are only suggestive and more research is needed before any firm conclusions can be reached.

In addition, the partial remains of a coca leaf (*Erythroxylum coca*) was recovered in an Early EIP context in Unit II-Ext, and a second was recovered from a Late Formative Period context in Unit III (Figure 7.1).\(^{136}\) Coca is a highly important plant in the highland Andes; the alkaloid components in the coca leaves provide a mild stimulant, and is used in traditional medicine as an anesthetic and analgesic, as well as for a wide variety of other medicinal purposes. Coca is a critical component of many indigenous ritual practices today, and early colonial ethnohistorical documents testify to its widespread ritual use throughout the Inca Empire. Traditionally consumed by chewing or prepared as a tea, coca serves as a critical social lubricant for many gatherings. Coca plants are restricted to humid environments at lower elevations, and the most accessible coca fields

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\(^{136}\) Another fragment of a leaf was identified as possibly coca from a Late Formative Period context in Unit III, but could not be securely identified and is not discussed here.
to the Cusco region are on the eastern Andean slopes. Control over access to lowland coca growing regions near Cusco may have been critical to the early political economy of the Inca state (Bauer and Covey 2002; D’Altroy 2015; Wilkinson 2013a, 2018). The presence of a preserved coca leaf in early an context at Minaspata suggests that the importance of this plant in the Cusco region probably extends deep into prehistory, and that long-distance contacts with lowland regions may have been more developed at an early stage than is normally assumed.

Discussion and Summary of Macrobotanical Remains at Minaspata

Judging from traditional culinary practices in the modern day (Gade 1975; see also Bray 2003c, 2003b, 2008; Jennings and Duke 2018), as well as ethnohistorical sources (e.g., Cobo 1964), domesticated staple crops of the south-central highland Andes in prehistory would have included maize, potato (Solanum sp.), legumes (Phaseolus vulgaris and the Fabaceae family), and amaranths (Amaranthaceae family) such as quinoa (Chenopodium quinoa) and kiwicha (Amaranthus sp.) (see also Pearsall 2008). Other important food plants that may be expected in the archaeological record include well-preserved coca and seeds of native plants, or spices and other condiments (such as aji pepper). Of these plants, only maize, legumes, and sage (a flavor additive) were identified at Minsapata, and maize and legumes appear to have constituted the bulk of the diet through time. Potatoes were also probably consumed, as they form a critical component of most highland diets, but would not be expected to be preserved: the whole potato is generally consumed (leaving little trace of consumption) and, as a root plant,
lacks hard parts which are more likely to be preserved. The lack of *Solanum sp.* in the macrobotanical assemblage is likely due entirely to preservation and sampling issues, rather than an absence in the local diet.

However, the total lack of quinoa and kiwicha in the macrobotanical assemblage is more difficult to explain: quinoa preserves better than some other crops due to its small size and hardier structure (Hastorf 2001: 162), and the preservation of quinoa should not be a major issue if other plant remains were preserved. The general paucity of published macrobotanical studies from archaeological sites in the Cusco region make a larger comparison difficult, but amaranth remains have been noted at the Late Formative Period site of Yuthu (Davis 2010) and the Inca site of Cheqoq (Quave 2012), and would be expected to be present for at least some phases at Minaspata.

Macrobotanical remains from Minaspata as part of the 2015-2016 excavations conducted by the Cusco Ministry of Culture were collected using opportunistic bulk sediment samples from particular contexts rather than systematically sampled. However, maize, beans (*Phaseolus vulgaris*), and quinoa were identified in the archaeological record from these floated sediment samples (Quispe Serrano et al. 2016). Maize, unsurprisingly, was the most prevalent crop in these contexts; a total of 372 complete and 192 fractured specimens of *Zea mays* were recovered from contexts across four excavation units. *Phaseolus vulgaris* was also recovered in substantial quantities, with a total of 279 fractured and complete specimens recovered from two units. *Chenopodium quinoa* was rare by comparison: only 16 specimens of domesticated quinoa were recovered from four contexts across three excavation unit. The quinoa specimens all
dated to Late Formative Period contexts (although no radiocarbon dates were processed and more precise dating is unavailable). The presence of quinoa at Minaspata recovered as part of this larger project, even in relatively miniscule amounts, suggests that sample bias from limited excavations in 2013 may partly account for its absence in this sample, and it may have played a very minor role in the local diet during the Formative Period.

Pollen recovered from lake cores at Lake Marcacocha, a high altitude lake 12 km from the Inca site of Ollantaytambo northwest of Cusco, suggests that the production of crops in the Amaranthaceae family were important in the Cusco region for over 2000 years during the Formative Period, until 100 CE when its use sharply diminishes as the climate entered a sustained cool period (Chepstow-Lusty 2011; Kendall and Chepstow-Lusty 2006). Production of these crops would never again reach significant levels in the Cusco region, despite minor resurgences in the Lake Marcacocha environmental record (Chepstow-Lusty 2011:577). In this context, that these 16 specimens of *Chenopodium quinoa* recovered from Minaspata during the Ministry of Culture project all date to Late Formative Period contexts is noteworthy. This cooling period identified in the paleoenvironmental record may have affected groups in the Lucre Basin more significantly than in other regions – if not climatically, then perhaps culturally. Quinoa (and, perhaps, kiwicha) may have been cultivated and consumed in small amounts at Minaspata during the Formative Period, although the amaranths played a negligible role, if any, after the beginning of the EIP.
Zooarchaeological Evidence for Diet and Cuisine at Minaspata

Faunal remains were systematically collected through hand recovery and dry screening from all excavated contexts at Minaspata. While better preserved and represented than the macrobotanical remains, the faunal assemblage is also subject to its own set of biases (Lyman 1994, 1997; Reitz and Wing 2008). These biases are primarily related to the impact of cultural practices affecting the deposition of different elements and body parts of various animals, and rates of fragmentation. Natural and taphonomic factors also affect the post-depositional histories of animal bone, which can result in differential preservation rates.

A total of 3,980 faunal specimens could be identified to taxon and/or element and were classified as Special Artifacts (AE). Of these, 2,456 were further analyzed on a variety of attributes discussed in Chapter 2, although only some of that data will be presented. In addition, 13,376 specimens totaling 26,962.75 grams were collected and categorized as General Artifacts (GE), as extreme fragmentation made identification and analysis impossible.

These AE specimens were quantified using NISP, MNI and specimen bone weight analytical methods137 (Reitz and Wing 2008).

- **NISP** (Number of Identifiable Specimens): NISP represents a total count of the identifiable bones. High fragmentation rates may cause some taxa to be overrepresented in the NISP count; by using NISP as a measure of abundance, the analyst assumes that cultural and noncultural fragmentation is uniform, recovery

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137 Specimens from unstratified contexts, or for which the taxon identification was unclear, were removed from analysis.
rates are constant for each taxon, and all taxa have an equal opportunity to be counted. It is also difficult to know whether the specimens are independent of one another – for example, several non-overlapping camelid tibia in the same context may belong to the same animal or to multiple animals. However, it is still a useful, if basic and sometimes problematic, unit of measure and provides insight into the changing frequency of different taxa and elements over time. NISP may also over represent small animals in particular, which may have been consumed and deposited as a full unit, whereas larger animals may have been consumed and deposited in elements or body parts; thus, fewer bones of the larger animals will be represented, even though they provide far more meat than smaller animals.

- **MNI (Minimum Number of Individuals):** MNI is calculated by estimating the minimum number of individual animals that can account for the representation of identifiable specimens recovered for any given context or phase. MNI was determined by assessing taxon, element identification, anatomical side, bone fusion state, and portion of the bone extant, and was calculated by chronological phase for each unit. Some categories may overlap, causing confusion regarding the total MNI representation of certain taxa (such as Indeterminate Artiodactyl with the deer and camelid categories); as a result, all “indeterminate” categories were removed from consideration when determining MNI. A an analytical quantification method, MNI will generally underrepresent the full range of individuals present at a site for any given phase. MNI may give the sense that full individuals were used and deposited in archaeological contexts when only
elements were used, such as when animals were butchered elsewhere and transported to the places where they were consumed and deposited. In a sense, MNI should be seen as the minimum number of individual taxa present for a given context and phase, whereas NISP can be seen as the maximum. The actual number is usually somewhere in between.

- **Specimen weight**: Problems of representation using NISP and MNI can be rectified to some extent by the quantification of total bone weight per taxon per chronological phase. Larger animals have denser, heavier bones, which can be used as a relative – if imperfect – proxy measurement for the importance of taxa of different sizes.  

Because horizontal excavations were limited (Chapter 4), many of the excavated contexts contained small quantities of faunal remains, which can cause some interpretive problems. While these can be combined larger units, some of the resolution is lost. Since the research objective is to identify the relative importance of animals and changes through time, NISP, MNI, and specimen weight organized by chronological phase should be sufficient.

Domesticated animals in the Andes include the llama, alpaca, guinea pig (*cuy*), dog, and Muscovy duck (Stahl 2008). Most domesticates were identified in archaeological contexts at Minaspata.

The most frequent and important domesticate recovered at Minaspata belong to the family Camelidae, which includes the llama (*Lama glama*) and alpaca (*Vicugna*

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138 No attempt was made to estimate dietary contribution from meat weight (Casteel 1978; Chaplin 1971:67–68; Ziegler 1973:30–31).
pacos). In addition to food, llamas, the larger of these two camelid domesticates, were also important as a pack animal, and caravans of llamas carrying goods formed the basis of long-distance exchange in the Precolumbian Andean highlands. Alpacas were not as well-suited for carrying heavy goods over long distances, but produced much finer and softer wool and were probably bred and herded for this purpose, particularly in later periods. Alpaca meat is also more tender and was probably preferred to llama meat. In addition, domesticated camelid dung is an important source of fuel for high altitude areas where rapidly growing tree species are rare, and tools (especially for weaving) made from camelid bones are frequently found in archaeological contexts in the Andes (including at Minaspata). Guanacos (Lama guanicoe) and vicuñas (Vicugna vicugna), the wild progenitors of the domesticated camelids, may have been hunted from time to time but were not kept in herds. While some small differences in skeletal development between the different camelid species have been identified (such as the location of enamel on mandibular incisors, or ranges of osteometric dimensions on particular elements such as the first phalanx) (Gonalons and Yaccobaccio 2006), these species are essentially indistinguishable in the zooarchaeological record. Although I have not tried to separate them, a few specimens could be tentatively identified as guanaco and vicuña, and their presence in the faunal assemblage of Minaspata is likely.

Guinea pigs or cuy (Cavia porcellus) were also identified at Minaspata.139 These animals are small and provide relatively little meat per animal, but are easy to raise in

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139 Although most of the Cavia sp. assemblage probably represents domesticated guinea pigs, a small number of specimens may represent the wild guinea pig Cavia tschudii, but the two species are nearly impossible to distinguish through the analysis of bone specimens alone.
domestic households, eating scraps off the floor and easily kept in pens; they reproduce quickly, and were an important source of animal protein and fat throughout prehistory in the highland Andes (Rosenfeld 2008). Guinea pig remains have a biased recovery rate in archaeological sites due to post-depositional effects on preservation, as well as loss in dry screening (Valdez and Valdez 1997), and they may have represented a larger portion of animal consumption than can be seen through osteological analysis, particularly for the earlier phases at Minaspata where preservation may be more greatly affected.

Unidentified birds of the class Aves were found infrequently in several different contexts. Although bird bones are highly distinctive from mammal bones and can easily be identified in zooarchaeological analysis, this project lacked a comparative sample for birds and the bones were generally isolated and fractured. They also formed a miniscule part of the overall assemblage. Although no attempt was made to differentiate between different species of birds, some of the birds recovered from Minaspata may represent domesticated Muscovy ducks and wild birds.

A small number of canine remains were also identified in the faunal assemblage. These were infrequent and isolated elements which never occurred in large quantities within a single context or phase. Whether these canine remains represent domesticated dogs or wild foxes is unclear. However, none of the recovered elements showed signs of food consumption, such as burning or cut marks.

In addition, a number of wild animals were recovered as part of the faunal assemblage that likely represents wild animals hunted for supplementary nutrition. These make up a small part of the assemblage at Minaspata. The most frequent wild animal to
appear was deer (family Cervidae). The ratio of deer to camelid appearing in archaeological contexts can be used in the Andes as a proxy measure to indicate the relative importance of hunting in a community’s diet. Wild deer recovered at Minaspata was probably hunted for meat, and most likely includes the white-tailed deer (*Odocoileus virginianus*), although the taruca deer (*Hippocamelus antisensis*) is also indigenous to the Cusco region and may have composed a portion of the overall Cervidae present at the site.

The mountain viscacha (*Lagidium peruanum*) was also uncommon, represented by only a few elements spread across different chronological phases. This small rodent of the Chinchillidae family is native to the south central Andes but appears only in small quantities when reported in archaeological sites around the Cusco region (Davis 2010; Quave 2012). The Peruvian tuco-tuco (*Ctenomyidae peruanus*), another small rodent which spends most of its life underground, was also represented by a few isolated remains. Although possibly occasionally been consumed as food, these animals may have also intruded on archaeological contexts through burrowing. However, four specimens belonging to the *Ctenomyidae* taxon had cut marks on them, suggesting they were a food source. No specimens identified as *Lagidium peruanum* were recovered containing cut marks. A number of other small rodents, including mice, were also recovered. These were predominantly found in later contexts, and are unlikely to have been a food source, having likely burrowed into surface contexts and dying naturally.

The remainder of the identified taxa is composed of isolated remains of different animals. A single cervical vertebra occurring in a Late EIP context was identified as
feline. Three elements belonging to a frog or toad (two from Mid EIP phase contexts and one from a Late Horizon context) were recovered, and a few fish scales were found in a single context dating to the Late EIP/Middle Horizon in Unit II-Ext. Part of a turtle carapace was also identified from a Late Formative Period context in Unit I-B. These taxa may represent occasional food sources collected from nearby Lake Muina, although the frog/toad and fish remains may be underrepresented due to preservation issues. The absence of fish in particular is interesting, given the proximity of Minaspata to a small lake, as no fish bones were recovered during excavation or from floated bulk sediment samples.

In addition, a single mandible belonging to a small monkey was also recovered from a Late Formative period context in Unit I-B (Figure 7.2). As an animal non-native to the highlands, monkeys would have had to have been transported from the lowland

![Figure 7.2. Superior (A) and inferior (B) view of small monkey mandible recovered from Late Formative Period context in Unit I.](image)
eastern slopes. The animal may have been a pet and probably represents early long-distance exchange with lowland regions to the east.

Finally, 8 specimens belonging to genus *Sus*, probably the domestic pig (*Sus scrofa*) were also recovered. This animal is not native to the Americas and was probably brought over by Spanish colonists in the 16th and 17th century. All 8 specimens (MNI=2) were associated in contexts close to the surface. Excavations revealed features probably associated with early Colonial Period activity around Unit II-Ext, most likely opportunistic looting in the years following the site’s abandonment (Chapter 5). The presence of these specimens in the faunal assemblage of Minaspata is probably a result of this early Spanish activity, which seems to have been relatively minor and short-lived.

Three other analytical categories were used when a specimen was too incomplete or eroded for more precise identification. “Indeterminate Large Mammal” and “Indeterminate Artiodactyla” were used when specimens represented large mammal bones or could be identified as either deer or camelid. These two categories are combined here for presentation because the only large mammals taxa indigenous to the Andean highlands are camelids and deer, which are both artiodactylae. Similarly, “Indeterminate Medium Mammal” and “Indeterminate Small Mammal” were used to categorize smaller specimens that could not be identified to Order or Family. Indeterminate Medium Mammal may include animals like felines and canines, and perhaps larger examples of rodents such as the tuco-tuco and viscacha. The Indeterminate Small Mammal category includes members of the order Rodentia such as mice and rats, unidentifiable *Cavia sp.*, and smaller examples of the viscacha and tuco-tuco.
<table>
<thead>
<tr>
<th>General Animal ID - NISP</th>
<th>Total</th>
<th>Middle Formative</th>
<th>Mid/Late Formative</th>
<th>Late Formative</th>
<th>Late LF/ Early EIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total # Contexts</td>
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<td>5</td>
<td>1.6%</td>
<td>8</td>
<td>2.5%</td>
</tr>
<tr>
<td>Total NISP Per Period</td>
<td>3807</td>
<td>173</td>
<td>4.5%</td>
<td>29</td>
<td>0.8%</td>
</tr>
<tr>
<td>NISP/Context (Density)</td>
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<td>3.625</td>
<td>14.32</td>
<td>10.25</td>
</tr>
<tr>
<td>Camelid</td>
<td>53.27%</td>
<td>2028</td>
<td>104</td>
<td>60.1%</td>
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<tr>
<td>Cervid</td>
<td>5.33%</td>
<td>203</td>
<td>9</td>
<td>5.2%</td>
<td>1</td>
</tr>
<tr>
<td>Ind. Artiodactyl</td>
<td>23.77%</td>
<td>905</td>
<td>50</td>
<td>28.9%</td>
<td>9</td>
</tr>
<tr>
<td>Canine</td>
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</tr>
<tr>
<td>Feline</td>
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<td></td>
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<td>Guinea Pig</td>
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<tr>
<td>Viscacha</td>
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<td>6</td>
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<td>0.6%</td>
<td>1</td>
</tr>
<tr>
<td>Peruvian Tuco-tuco</td>
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<tr>
<td>Ind. Small Mammal</td>
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<td>1.7%</td>
<td>2</td>
</tr>
<tr>
<td>Bird</td>
<td>1.05%</td>
<td>40</td>
<td>1</td>
<td>1.7%</td>
<td></td>
</tr>
<tr>
<td>Primate (Monkey)</td>
<td>0.03%</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Turtle</td>
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<td>1</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Fish</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Frog/Toad</td>
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<td>3</td>
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<tr>
<td>Pig</td>
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<td>8</td>
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<td>5</td>
<td>2.9%</td>
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</table>

Table 7.5 - NISP quantities and percentages of all fauna recovered from Minaspata by chronological phase left to right. (Taxon % is NISP/Period).
<table>
<thead>
<tr>
<th>General Animal ID - NISP</th>
<th>Early EIP</th>
<th>Mid EIP</th>
<th>Late EIP</th>
<th>Late EIP/MH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total # Contexts</td>
<td>27</td>
<td>34</td>
<td>36</td>
<td>8</td>
</tr>
<tr>
<td>Total NISP Per Period</td>
<td>228</td>
<td>396</td>
<td>352</td>
<td>199</td>
</tr>
<tr>
<td>NISP/Context (Density)</td>
<td>8.44</td>
<td>11.65</td>
<td>9.78</td>
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</tr>
<tr>
<td>Camelid</td>
<td>135</td>
<td>218</td>
<td>179</td>
<td>123</td>
</tr>
<tr>
<td></td>
<td>59.2%</td>
<td>55.1%</td>
<td>50.9%</td>
<td>61.8%</td>
</tr>
<tr>
<td>Cervid</td>
<td>19</td>
<td>21</td>
<td>28</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>8.3%</td>
<td>5.3%</td>
<td>8.0%</td>
<td>4.5%</td>
</tr>
<tr>
<td>Ind. Artiodactyl</td>
<td>52</td>
<td>87</td>
<td>86</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>22.8%</td>
<td>22.0%</td>
<td>24.4%</td>
<td>21.1%</td>
</tr>
<tr>
<td>Canine</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>0.4%</td>
<td>0.3%</td>
<td>0.3%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Feline</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.3%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ind. Medium Mammal</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.9%</td>
<td>0.5%</td>
<td>1.1%</td>
<td></td>
</tr>
<tr>
<td>Guinea Pig</td>
<td>6</td>
<td>27</td>
<td>32</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>2.6%</td>
<td>6.8%</td>
<td>9.1%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Viscacha</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.4%</td>
<td></td>
<td>0.3%</td>
<td></td>
</tr>
<tr>
<td>Peruvian Tuco-tuco</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>0.4%</td>
<td>0.3%</td>
<td>0.9%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Ind. Small Mammal</td>
<td>11</td>
<td>33</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>4.8%</td>
<td>8.3%</td>
<td>4.3%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Bird</td>
<td>6</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.5%</td>
<td></td>
<td>0.6%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Primate (Monkey)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turtle</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.5%</td>
</tr>
<tr>
<td>Frog/Toad</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.5%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pig</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ind.</td>
<td>16</td>
<td>14</td>
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</tr>
<tr>
<td></td>
<td>7.0%</td>
<td>3.5%</td>
<td>6.0%</td>
<td>0.5%</td>
</tr>
</tbody>
</table>

Table 7.5 (continued) - NISP quantities and percentages of all fauna recovered from Minaspata by chronological phase left to right. (Taxon % is NISP/Period).
<table>
<thead>
<tr>
<th>General Animal ID - NISP</th>
<th>Early LIP</th>
<th>Mid LIP</th>
<th>Late LIP</th>
<th>Late Horizon</th>
<th>Mixed</th>
</tr>
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<tr>
<td>Total # Contexts</td>
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<td>12</td>
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<td>13</td>
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<tr>
<td>Total NISP Per Period</td>
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<td>160</td>
<td>209</td>
<td>821</td>
<td>251</td>
</tr>
<tr>
<td>NISP/Context (Density)</td>
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<td>17.42</td>
<td>10.95</td>
<td>19.31</td>
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<td>77</td>
<td>114</td>
<td>463</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>57.3%</td>
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<td>54.5%</td>
<td>56.4%</td>
<td>31.9%</td>
</tr>
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<td>Cervid</td>
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<td>10</td>
<td>35</td>
<td>11</td>
</tr>
<tr>
<td></td>
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<td>4.8%</td>
<td>4.3%</td>
<td>4.4%</td>
</tr>
<tr>
<td>Ind. Artiodactyl</td>
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</tr>
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<td>15.8%</td>
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<tr>
<td></td>
<td>0.5%</td>
<td>1.3%</td>
<td>0.6%</td>
<td>0.8%</td>
<td></td>
</tr>
<tr>
<td>Feline</td>
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<td></td>
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<tr>
<td>Ind. Medium Mammal</td>
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<td></td>
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<td>1.4%</td>
<td>1.1%</td>
<td>0.8%</td>
</tr>
<tr>
<td>Guinea Pig</td>
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<td>15</td>
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<td></td>
<td>8.5%</td>
<td>11.9%</td>
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<td>9.7%</td>
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<td>Viscacha</td>
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<td>0.5%</td>
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<td>Primate (Monkey)</td>
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<tr>
<td>Pig</td>
<td></td>
<td></td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ind.</td>
<td>5</td>
<td>1</td>
<td>4</td>
<td>44</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>2.5%</td>
<td>0.6%</td>
<td>1.9%</td>
<td>5.4%</td>
<td>2.0%</td>
</tr>
</tbody>
</table>

Table 7.5 (continued) - NISP quantities and percentages of all fauna recovered from Minaspata by chronological phase left to right. (Taxon % is NISP/Period).
NISP quantities of taxa identified at Minaspata indicate that camelids dominate the overall faunal assemblage, constituting a total of 53.27% through all periods. This dependence on camelids seems consistent across all periods, ranging between 50% and 62% of the assemblage for each phase. Two exceptions stand out. The first is the Late Formative Period/Early EIP transitional phase, where camelids only constitute 43.5% of the assemblage. However, this phase also has the highest percentage of specimens identified as Indeterminate Artiodactyla; the relatively low occurrence of camelids in this phase is most likely due to poor preservation and/or high rates of fragmentation, leading to a greater percentage of probable camelids being classified as Indeterminate. The second exception is during the Mid LIP phase. This phase has one of the lowest total NISP counts (n=160), and this relatively low representation of camelids, may be the result of random statistical variation.

Deer occur rarely in the overall assemblage, representing only 5.3% of the total specimen count, although consistent in all chronological phases. The quantities in each phase are generally small, meaning that any interpretations may be affected by random statistical variation or preservation biases. Nonetheless, some trends can be identified across phases. Cervids form a smaller proportion of the overall assemblage during Formative Period phases, between 3.4 and 5.2% of the overall NISP count. They are slightly more prevalent during the EIP phases, ranging between 5.3 and 8.3%, only to decrease again after the MH, forming 3.8 to 6.0% of the overall assemblage for the LIP and Late Horizon phases. This decrease in the prevalence of deer after the Middle Horizon may indicate a slightly higher reliance on domesticated species and a decreased
importance of supplementary hunting in the diet of the Minaspata population through
time, particularly when the higher rates of guinea pig during these phases are also taken
into account (see below).140

Domesticated guinea pigs (*Cavia porcellus*) are present through most phases; they
are lowest during the Formative Period phases but begin to increase in the Mid and Late
EIP phases, reaching a high of 9.1% of the overall assemblage in the Late EIP phase.
This proportion decreases after the Middle Horizon but, unlike the occurrence of deer,
begins to increase again in the Mid LIP to reach a substantial portion of the diet of nearly
20% of the NISP count in the Late LIP.141 This increase may actually have been more
pronounced in the Mid LIP, as that phase also contains the highest proportion of
specimens categorized as Indeterminate Small Mammal. Although including mice and
rats, as well as unidentifiable wild rodents that may have served as occasional food
sources, this category also includes unidentifiable *Cavia porcellus*. If most of this
category during the Mid LIP consists of unidentified guinea pig remains, the proportion
of the NISP of guinea pig remains would be close to its representation in the Late LIP
phase.

Canines are poorly represented, constituting <1% of the overall assemblage. They
appear consistently in most phases beginning in the Late Formative Period phase, often

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140 The Ind. Artiodactyl category is highest in the Formative Period contexts, but this probably due to
taphonomic issues, since the Formative Period phases are the oldest and would be most susceptible to
higher erosion and fragmentation. The consistency of this category after the Formative Period phases,
ranging from 21.1 to 24.4% (with the sole exception of the Late LIP phase) suggests similar fragmentation
rates and food preparation practices across time.
141 Again, NISP counts may over-represent the frequency of small animals if they are consumed and
deposited as whole or mostly whole animals.
represented by a single specimen. These specimens may represent domesticated dogs or hunted wild fox. Whether these were animals were consumed as food or simply deposited in the archaeological record through other means is unclear.

Birds are most highly represented in the Late Formative Period phase but are less frequent in following phases. These may be wild birds which were caught and consumed opportunistically, particularly in earlier phases. Small rodents which may have been caught and consumed opportunistically, such as the viscacha and tuco-tuco, form similarly miniscule components of the faunal record at Minaspata. Rodents are infrequent across all phases when present, and their frequency does not seem to change significantly in any phase.

Based on the number of identifiable taxa represented in each phase, the highest diversity appears to be during the Late Formative Period phase, with 9 total taxa (camelids, deer, canines, guinea pigs, viscacha, tuco-tuco, bird, turtle, and monkey) represented, although not all may have been consumed as food. The Late EIP and Late Horizon phases also appear to be more diverse in terms of taxonomic presence. The Early Intermediate Period as a whole is diverse and appears to increase slightly in diversity through each phase. The Late Intermediate Period, by contrast, appears to decrease in diversity, and the Late LIP phase is represented only by camelids, guinea pigs, and a small amount of deer. This shift may represent an intensified focus on key domesticates that increases throughout the Late Intermediate Period, although a larger number of specimens is needed to confirm this.
Because NISP counts minimize the importance of species represented by only a few specimens, and exaggerates the importance of species whose elements are more readily identified, MNI can be used to address some of the importance of rare animals in small sample: a single specimen always represents at least one individual, whereas some taxa may be represented by many unpaired specimens and also count as a single individual (Reitz and Wing 2008).
<table>
<thead>
<tr>
<th>MNI All Units</th>
<th>Mid Formative</th>
<th>Mid/Late Formative</th>
<th>Late Formative</th>
<th>Late Formative/Early EIP</th>
<th>Early EIP</th>
<th>Mid EIP</th>
<th>Late EIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camelid</td>
<td>3 42.9%</td>
<td>1 50.0%</td>
<td>12 44.4%</td>
<td>5 41.7%</td>
<td>7 50.0%</td>
<td>9 40.9%</td>
<td>6 30.0%</td>
</tr>
<tr>
<td>Deer</td>
<td>1 14.3%</td>
<td>1 50.0%</td>
<td>3 11.1%</td>
<td>2 16.7%</td>
<td>3 21.4%</td>
<td>3 13.6%</td>
<td>4 20.0%</td>
</tr>
<tr>
<td>Canine</td>
<td>2 7.4%</td>
<td>1 8.3%</td>
<td>1 7.1%</td>
<td>1 4.5%</td>
<td>1 5.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feline</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 5.0%</td>
<td></td>
</tr>
<tr>
<td>Guinea Pig</td>
<td>2 28.6%</td>
<td>2 7.4%</td>
<td>2 16.7%</td>
<td>1 7.1%</td>
<td>4 18.2%</td>
<td>5 25.0%</td>
<td></td>
</tr>
<tr>
<td>Viscacha</td>
<td>1 14.3%</td>
<td>1 3.7%</td>
<td>1 7.1%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tuco-Tuco</td>
<td>2 7.4%</td>
<td>1 7.1%</td>
<td>1 4.5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bird</td>
<td>3 11.1%</td>
<td>2 16.7%</td>
<td>2 16.7%</td>
<td></td>
<td>3 13.6%</td>
<td>1 5.0%</td>
<td></td>
</tr>
<tr>
<td>Monkey</td>
<td>1 3.7%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turtle</td>
<td>1 3.7%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frog/Toad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 4.5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pig</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL MNI</td>
<td>7</td>
<td>2</td>
<td>27</td>
<td>12</td>
<td>14</td>
<td>22</td>
<td>20</td>
</tr>
</tbody>
</table>

Table 7.6 - MNI quantities of all identified taxa at Minaspata through chronological phases.
Table 7.6 (continued): MNI quantities of all identified taxa at Minaspata through chronological phases.

<table>
<thead>
<tr>
<th>MNI All Units</th>
<th>Late EIP/MH</th>
<th>Early LIP</th>
<th>Mid LIP</th>
<th>Late LIP</th>
<th>Late LIP/Inca</th>
<th>Mixed</th>
<th>MNI total</th>
<th>MNI %</th>
<th>NISP %</th>
<th>NISP Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camelid</td>
<td>4</td>
<td>44.4%</td>
<td>3</td>
<td>37.5%</td>
<td>5</td>
<td>33.3%</td>
<td>17</td>
<td>35.4%</td>
<td>6</td>
<td>35.3%</td>
</tr>
<tr>
<td>Deer</td>
<td>1</td>
<td>11.1%</td>
<td>1</td>
<td>12.5%</td>
<td>1</td>
<td>6.7%</td>
<td>4</td>
<td>8.3%</td>
<td>3</td>
<td>17.6%</td>
</tr>
<tr>
<td>Canine</td>
<td>1</td>
<td>12.5%</td>
<td>1</td>
<td>4.2%</td>
<td>2</td>
<td></td>
<td>9</td>
<td>4.3%</td>
<td>0.7%</td>
<td>19</td>
</tr>
<tr>
<td>Feline</td>
<td>1</td>
<td>0.5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>0.5%</td>
<td>0.0%</td>
<td>1</td>
</tr>
<tr>
<td>Guinea Pig</td>
<td>2</td>
<td>22.2%</td>
<td>3</td>
<td>33.3%</td>
<td>2</td>
<td>25.0%</td>
<td>9</td>
<td>60.0%</td>
<td>17</td>
<td>35.4%</td>
</tr>
<tr>
<td>Viscacha</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>4.2%</td>
<td>6</td>
<td>2.9%</td>
</tr>
<tr>
<td>Tuco-Tuco</td>
<td>1</td>
<td>11.1%</td>
<td>1</td>
<td>12.5%</td>
<td>1</td>
<td>2.1%</td>
<td>2</td>
<td>11.8%</td>
<td>11</td>
<td>5.2%</td>
</tr>
<tr>
<td>Bird</td>
<td>1</td>
<td>11.1%</td>
<td>1</td>
<td>12.5%</td>
<td></td>
<td></td>
<td>2</td>
<td>4.2%</td>
<td>11</td>
<td>5.2%</td>
</tr>
<tr>
<td>Monkey</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>0.5%</td>
<td>0.0%</td>
<td>1</td>
</tr>
<tr>
<td>Turtle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>0.5%</td>
<td>0.0%</td>
<td>1</td>
</tr>
<tr>
<td>Fish</td>
<td>1</td>
<td>11.1%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>0.5%</td>
<td>0.0%</td>
<td>1</td>
</tr>
<tr>
<td>Frog/Toad</td>
<td>1</td>
<td>2.1%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>1.0%</td>
<td>0.1%</td>
<td>3</td>
</tr>
<tr>
<td>Pig</td>
<td>2</td>
<td>4.2%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>1.0%</td>
<td>0.3%</td>
<td>8</td>
</tr>
<tr>
<td>TOTAL MNI</td>
<td>9</td>
<td>9</td>
<td>8</td>
<td>15</td>
<td>48</td>
<td>17</td>
<td>210</td>
<td>2596</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 7.6 (continued): MNI quantities of all identified taxa at Minaspata through chronological phases.
Quantities of MNI for different taxa at Minaspata suggest an even representation of species across different chronological phases. While camelids dominate the assemblage, the percentage is much closer to the representation of other taxa: with Indeterminate categories removed from the total NISP count, the NISP% for Camelids is 78.5%, compared to MNI% of 39.0%. Deer appear much more highly represented, with an MNI% of 13.3%. Canines increase in representation, and guinea pigs appear to be a much more important and consistent part of the diet at Minaspata with an MNI% of 26.2% across all phases.

Evaluation of the MNI% counts across chronological phases show similar trends as the NISP%: camelids form the largest part of the diet in any given phase, consistently across time. However, guinea pigs seem to form a much more important component of the diet in the Late LIP and Late Horizon phases when using MNI compared to NISP. The ratio of guinea pigs also seems to increase gradually throughout the EIP, leveling off after the Middle Horizon until jumping sharply in the Late LIP phase. Deer is more prevalent before the Middle Horizon than afterwards, as are other small wild rodents such as the viscacha and tuco-tuco. Together, these suggest that hunting of wild animals played a small role in the community diet prior to the Middle Horizon, and that the importance of wild animals as a supplementary source of protein decreased significantly afterwards.

Specimen weight can also be used to evaluate relative frequencies of taxa (Driesch 1993; Stahl 1995:158) and is useful for quantifying the degree of fragmentation for various taxa, as well as the spatial and temporal attributes of specimens. While
estimates of meat weight and dietary contributions among animals identified in a
collection should not be confused with the total amount of meat consumed at a site (Reitz
and Wing 2008:237–239), specimen weight can also be used as a proxy for the relative
amount of meat contributed by a taxon when compared through time (e.g., Zeder
1991:90), although it can be affected by taphonomic factors such as leaching and
mineralization.\footnote{One additional consideration when using specimen weight is that large bones belonging to meaty parts such as the hindlimb and forelimb are heavier, and estimating the relative importance of different taxa through time using specimen weight will be affected if the importance of meaty vs. non-meaty elements change through time. Conversely, the trunk is a high-value meaty anatomical region that has relatively few heavy bones, predominantly composed of vertebrae and ribs which fracture easily and are difficult to identify to taxon in the faunal assemblage. As a result, use of specimen weight as a proxy measure for the relative importance of meat from different animals should be considered with a grain of salt, and used in conjunction with MNI and NISP analytical methods.}

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<table>
<thead>
<tr>
<th>Animal ID</th>
<th>Total Weight (g)</th>
<th>Total</th>
<th>Middle Formative</th>
<th>Mid/Late Formative</th>
<th>Late Formative</th>
<th>Late LF/Early EIP</th>
<th>Early EIP</th>
<th>Mid EIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>28171.6</td>
<td>1581.1</td>
<td>213.7</td>
<td>4481.3</td>
<td>1755.1</td>
<td>1440.8</td>
<td>3027.7</td>
<td></td>
</tr>
<tr>
<td>Camelid</td>
<td>20581.0</td>
<td>73.06%</td>
<td>1224.6</td>
<td>79.5%</td>
<td>3104.9</td>
<td>58.7%</td>
<td>1077.6</td>
<td>82.7%</td>
</tr>
<tr>
<td>Cervid</td>
<td>1415.6</td>
<td>5.02%</td>
<td>58.3</td>
<td>3.7%</td>
<td>198.6</td>
<td>4.4%</td>
<td>76.6</td>
<td>5.3%</td>
</tr>
<tr>
<td>Ind. Artiodactyla</td>
<td>5514.4</td>
<td>19.57%</td>
<td>292.7</td>
<td>18.5%</td>
<td>1110.7</td>
<td>24.8%</td>
<td>563.6</td>
<td>11.6%</td>
</tr>
<tr>
<td>Canine</td>
<td>70.1</td>
<td>0.25%</td>
<td>32.3</td>
<td>0.7%</td>
<td>2.9</td>
<td>0.2%</td>
<td>0.1</td>
<td>0.0%</td>
</tr>
<tr>
<td>Feline</td>
<td>5.1</td>
<td>0.02%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.7</td>
<td>0.1%</td>
</tr>
<tr>
<td>Ind. Medium Mammal</td>
<td>61.9</td>
<td>0.22%</td>
<td>6.3</td>
<td>0.1%</td>
<td>12.6</td>
<td>0.7%</td>
<td>9</td>
<td>0.6%</td>
</tr>
<tr>
<td>Guinea Pig</td>
<td>180.9</td>
<td>0.64%</td>
<td>3.3</td>
<td>0.2%</td>
<td>2.1</td>
<td>0.0%</td>
<td>4</td>
<td>0.2%</td>
</tr>
<tr>
<td>Viscacha</td>
<td>7.6</td>
<td>0.03%</td>
<td>0.3</td>
<td>0.0%</td>
<td>0.1</td>
<td>0.0%</td>
<td>4.5</td>
<td>0.3%</td>
</tr>
<tr>
<td>Peruvian Taco-tuco</td>
<td>3.6</td>
<td>0.01%</td>
<td>0.7</td>
<td>0.0%</td>
<td></td>
<td></td>
<td>0.1</td>
<td>0.0%</td>
</tr>
<tr>
<td>Ind. Small Mammal</td>
<td>61</td>
<td>0.22%</td>
<td>1.9</td>
<td>0.1%</td>
<td>3.6</td>
<td>0.1%</td>
<td>2.8</td>
<td>0.2%</td>
</tr>
<tr>
<td>Bird</td>
<td>37</td>
<td>0.13%</td>
<td>13.9</td>
<td>0.3%</td>
<td>4.4</td>
<td>0.3%</td>
<td>3.1</td>
<td>0.1%</td>
</tr>
<tr>
<td>Primate (Monkey)</td>
<td>3.5</td>
<td>0.01%</td>
<td>3.5</td>
<td>0.1%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turtle</td>
<td>4.6</td>
<td>0.02%</td>
<td>4.6</td>
<td>0.1%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td>0.1</td>
<td>0.00%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frog/Toad</td>
<td>0.5</td>
<td>0.00%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.3</td>
<td>0.0%</td>
</tr>
<tr>
<td>Pig</td>
<td>224.7</td>
<td>0.80%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ind.</td>
<td>472.2</td>
<td>7.2</td>
<td>1.8</td>
<td>66</td>
<td>75</td>
<td>51.4</td>
<td>77</td>
<td></td>
</tr>
<tr>
<td>All Artiodactyl</td>
<td></td>
<td>98.46%</td>
<td>99.65%</td>
<td>99.86%</td>
<td>98.50%</td>
<td>98.46%</td>
<td>98.61%</td>
<td>99.08%</td>
</tr>
</tbody>
</table>

Table 7.7 - Specimen weight and % by taxa for each phase.
<table>
<thead>
<tr>
<th>General Animal ID</th>
<th>Late EIP</th>
<th>MH; Late EIP</th>
<th>Early LIP</th>
<th>Mid LIP</th>
<th>Late LIP</th>
<th>Inca/Late LIP</th>
<th>Mixed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Weight (g)</strong></td>
<td>2827.1</td>
<td>1455</td>
<td>1657.1</td>
<td>900.4</td>
<td>1050.9</td>
<td>6572.1</td>
<td>984.6</td>
</tr>
<tr>
<td>Camelid</td>
<td>1957.7</td>
<td>69.2%</td>
<td>1051.3</td>
<td>72.3%</td>
<td>1226.4</td>
<td>74.0%</td>
<td>669.1</td>
</tr>
<tr>
<td>Cervid</td>
<td>234.5</td>
<td>8.3%</td>
<td>66.9</td>
<td>4.6%</td>
<td>91.9</td>
<td>5.5%</td>
<td>33</td>
</tr>
<tr>
<td><strong>Ind. Artiodactyla</strong></td>
<td>582.1</td>
<td>20.6%</td>
<td>319.7</td>
<td>22.0%</td>
<td>320.3</td>
<td>19.3%</td>
<td>181.9</td>
</tr>
<tr>
<td>Canine</td>
<td>0.8</td>
<td>0.0%</td>
<td>6.7</td>
<td>0.5%</td>
<td>1.4</td>
<td>0.1%</td>
<td>3.5</td>
</tr>
<tr>
<td>Feline</td>
<td>5.1</td>
<td>0.2%</td>
<td>6.7</td>
<td>0.5%</td>
<td>1.4</td>
<td>0.1%</td>
<td>3.5</td>
</tr>
<tr>
<td><strong>Ind. Medium Mammal</strong></td>
<td>4</td>
<td>0.1%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.2</td>
</tr>
<tr>
<td>Guinea Pig</td>
<td>34.1</td>
<td>1.2%</td>
<td>7.6</td>
<td>0.5%</td>
<td>9.4</td>
<td>0.6%</td>
<td>10.2</td>
</tr>
<tr>
<td>Viscacha</td>
<td>0.4</td>
<td>0.0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peruvian Tucu-tuco</td>
<td>1</td>
<td>0.0%</td>
<td>0.3</td>
<td>0.0%</td>
<td>0.2</td>
<td>0.0%</td>
<td>0.3</td>
</tr>
<tr>
<td><strong>Ind. Small Mammal</strong></td>
<td>5.8</td>
<td>0.2%</td>
<td>1.2</td>
<td>0.1%</td>
<td>6.4</td>
<td>0.4%</td>
<td>2.4</td>
</tr>
<tr>
<td>Bird</td>
<td>1.6</td>
<td>0.1%</td>
<td>1.2</td>
<td>0.1%</td>
<td>1.1</td>
<td>0.1%</td>
<td></td>
</tr>
<tr>
<td>Primate (Monkey)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turtle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frog/Toad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pig</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>224.7</td>
</tr>
<tr>
<td><strong>Ind.</strong></td>
<td>69</td>
<td>0.5</td>
<td>9</td>
<td>0.4</td>
<td>3.7</td>
<td>89.8</td>
<td>21.4</td>
</tr>
<tr>
<td><strong>All Artiodactyl</strong></td>
<td>98.13</td>
<td>98.82%</td>
<td>98.88%</td>
<td>98.18%</td>
<td>96.50%</td>
<td>98.21%</td>
<td>97.10%</td>
</tr>
</tbody>
</table>

Table 7.7: Specimen weight and % by taxa for each phase (continued).
Unsurprisingly, camelids also dominate the assemblage when specimen weight is considered – to an even more overwhelming degree than indicated by other quantification methods. This is partly a product of the large size of individual camelids, as perhaps dozens of small or medium-sized animals (such as guinea pigs, for example) would need to be consumed to equal the meat utility of a single camelid. However, the specimen weight emphasizes the degree to which the community of Minapata was dependent on camelids – and, to a lesser extent, deer – for the vast majority of their animal protein. When the specimen weights for all artiodactyls (Camelids, Deer, and Ind. Artiodactyla) are combined, they consistently compose more than 98% of the total specimen weight for each chronological phase.

The single exception is during the Late LIP phase, where the total specimen weight of all artiodactyla only totals 96.5% of the full faunal assemblage. During this phase, the percentage of total specimen weight of Cavea porcellus in the archaeological record of Minaspata reaches its highest value for any phase, representing 2.7% of the total assemblage for that phase. This figure is particularly noteworthy given how small and light these bones are. In fact, the pattern identified for guinea pig frequency using the NISP and MNI quantification methods (increasing slightly during the EIP, resetting to a low percentage after the Middle Horizon, and then increasing drastically through the end of the LIP) is the clearest and most consistent trend replicated using specimen weight.

One way to examine chronological differences with faunal assemblages is by body part and anatomical region meat yield comparisons. This type of analysis may be misleading as a measurement of the nutritional utility of different animal elements, as low
meat-bearing regions such as the crania and metapodials may contain extra fat and
nutritious marrow, making them as appealing as more meaty anatomical regions in
certain situations (deFrance 2009:123). Nonetheless, such a comparison can indicate to
what extent these “non-meaty” parts were consumed, and provide some insight into how
consumption patterns may have changed through time. For example, marrow and cranial
fat are not typically prepared through roasting and would necessarily be boiled in soups,
stews, and animal stocks. More meaty parts may be roasted or boiled, and significantly
higher proportions of meaty to non-meaty body parts deposited in the archaeological
record may suggest that roasted animal meat formed a larger part of local diets.

Several methods to determine animal use have been proposed. Recognizing that
meat yields are on a continuum and aiming for simplicity, I use the method proposed by
Sandefur (2001) to analyze practices involving the preparation and consumption of
camelids at Minaspata and how these change through different chronological phases. This
method groups camelid skeletal elements into two categories: meaty and non-meaty. The
latter is composed of the skull (cranial bones, mandible, and teeth) and the lower limbs
(carpals, tarsals, metapodials, and phalanges), whereas the former includes the trunk
(represented by ribs and vertebrae, including the cervical vertebrae), the forelimb, and the
hindlimb.

Although other studies exploring this method use MNE (Minimum Number of
Elements), NISP is used as the analytical unit for comparison here. This analysis works
best with NISP when each element can be seen as fully independent of other elements,
which is rarely the case in most archaeological contexts. However, using NIPS to identify
the relative usage of different anatomical regions is appropriate when comparing ratios of each body part across time periods, rather than comparing the usage of different elements within a given chronological phase. This approach would be problematic using NISP, given the different frequencies and bone density (affecting preservation) of faunal bones in each anatomical region. For example, camelid hindlimbs and forelimbs are considered meaty regions but are composed of only a few large, dense bones, and would be underrepresented as an anatomical region using NISP. In contrast, the lower limbs contain numerous small carpals and tarsals, metapodials, and six phalanges for each foot, and would be overrepresented in the NISP count compared meatier anatomical regions. Regardless, the number of bones in each anatomical region does not change through time, meaning that NISP is sufficient for a chronological comparison of how the ratio between meaty and non-meaty animal parts changes through time.
<table>
<thead>
<tr>
<th>Body Segment</th>
<th>Meaty</th>
<th>Non-Meaty</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>797</td>
<td>1222</td>
<td>2019</td>
</tr>
<tr>
<td></td>
<td>39.5%</td>
<td>60.5%</td>
<td></td>
</tr>
<tr>
<td>Middle Formative</td>
<td>55</td>
<td>49</td>
<td>104</td>
</tr>
<tr>
<td></td>
<td>52.9%</td>
<td>47.1%</td>
<td></td>
</tr>
<tr>
<td>Mid/Late Formative</td>
<td>14</td>
<td>3</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>82.4%</td>
<td>17.6%</td>
<td></td>
</tr>
<tr>
<td>Late Formative</td>
<td>147</td>
<td>148</td>
<td>295</td>
</tr>
<tr>
<td></td>
<td>49.8%</td>
<td>50.2%</td>
<td></td>
</tr>
<tr>
<td>Late LF/Early EIP</td>
<td>50</td>
<td>57</td>
<td>107</td>
</tr>
<tr>
<td></td>
<td>46.7%</td>
<td>53.3%</td>
<td></td>
</tr>
<tr>
<td>Early EIP</td>
<td>54</td>
<td>79</td>
<td>133</td>
</tr>
<tr>
<td></td>
<td>40.6%</td>
<td>59.4%</td>
<td></td>
</tr>
<tr>
<td>Mid EIP</td>
<td>92</td>
<td>125</td>
<td>217</td>
</tr>
<tr>
<td></td>
<td>42.4%</td>
<td>57.6%</td>
<td></td>
</tr>
<tr>
<td>Late EIP</td>
<td>67</td>
<td>111</td>
<td>178</td>
</tr>
<tr>
<td></td>
<td>37.6%</td>
<td>62.4%</td>
<td></td>
</tr>
<tr>
<td>Terminal EIP/MH</td>
<td>50</td>
<td>73</td>
<td>123</td>
</tr>
<tr>
<td></td>
<td>40.7%</td>
<td>59.3%</td>
<td></td>
</tr>
<tr>
<td>Early LIP</td>
<td>38</td>
<td>76</td>
<td>114</td>
</tr>
<tr>
<td></td>
<td>33.3%</td>
<td>66.7%</td>
<td></td>
</tr>
<tr>
<td>Mid LIP</td>
<td>23</td>
<td>54</td>
<td>77</td>
</tr>
<tr>
<td></td>
<td>29.9%</td>
<td>70.1%</td>
<td></td>
</tr>
<tr>
<td>Late LIP</td>
<td>30</td>
<td>83</td>
<td>113</td>
</tr>
<tr>
<td></td>
<td>26.5%</td>
<td>73.5%</td>
<td></td>
</tr>
<tr>
<td>Late Horizon</td>
<td>153</td>
<td>308</td>
<td>461</td>
</tr>
<tr>
<td></td>
<td>33.2%</td>
<td>66.8%</td>
<td></td>
</tr>
<tr>
<td>Mixed</td>
<td>24</td>
<td>56</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>30.0%</td>
<td>70.0%</td>
<td></td>
</tr>
</tbody>
</table>

Table 7.8 - Percentages of elements for Camelid NISP grouped into “meaty” and “non-meaty” anatomical regions for each chronological phase.
Comparing the proportions of meaty vs. non-meaty skeletal elements recovered in the camelid faunal assemblage at Minaspata reveals suggesting patterns. The highest proportion of meaty elements was found in Formative Period components, where they represented between 46.7 and 52.9% of the overall camelid assemblage. This begins to decrease at the beginning of the EIP, where 37.6 to 40.7% of the camelid assemblage represents meaty skeletal elements. Another substantial decrease follows the Middle Horizon; between 26.5% and 33.3% of the camelid assemblage during the LIP represents meaty skeletal elements. This quantity decreases consistently by 2-4% each phase, before increasing slightly again in the Late Horizon.

While additional research is needed, camelid meat may have have been increasingly reserved for special events through time at Minaspata and less available for everyday consumption. Compared to the less meaty skeletal elements, meat is more suitable for energy intensive roasting (Sandefur 2001:194), which may have been reserved for special contexts; roasted meat is associated ethnographically and archaeologically with public feasting and elite contexts in the highland Andes (Kosiba 2010). In this scenario, meaty elements would have been consumed in specific places, such as public spaces or elite dwellings, perhaps not even located within the boundaries of Minaspata; as a result, the bones associated with these meaty regions (principally ribs, 

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143 Direct evidence of roasting can be identified in the zooarchaeological analysis of faunal remains by comparing rates of bones which are charred, burned, or calcined (which requires exposure to very high temperatures). Cooking methods that do not involve direct exposure to open flame – such as boiling – would be unlikely to produce burn marks on animal bone. Frequencies of burned bones were very low at Minaspata, however, ranging between 2.8 and 3.1%, and did not change through different chronological phases. As a result, they will not be further discussed here.
vertebrae, and large long bones in the hindlimb and forelimb) would be less frequently recovered in non-elite or non-public contexts in the archaeological record of Minaspata.

Since the ceramic assemblage suggests that elite feasting first became important during the EIP, and larger scale public feasting during the LIP, the reserving of meaty camelid body parts for special feasting contexts might explain the lower proportion of these elements recovered from the later phases. The relative scarcity of meatier body parts would have encouraged a more intensive reliance on non-meaty parts, prepared through boiling out the marrow and fat from these bones as part of soups or stews, as part of everyday consumption in domestic contexts. Roasted (or otherwise cooked) meaty elements may have become slightly more available or accessible under Inca rule during the Late Horizon, as the prevalence of open vessels (especially plates) better suited for serving meat and other dry goods increases substantially during this period.

**Discussion and Summary of the Faunal Assemblage at Minaspata.**

Camelids, primarily the domesticated llama and alpaca, dominate the overall faunal assemblage through time at Minaspata. The degree to which local diet depended on camelid meat, fat, and marrow varies little though all chronological phases spanning over 2000 years. However, the proportion of meaty camelid body parts consumed and deposited in the faunal record at Minaspata decreases substantially through time. This change may be related to an increasing importance placed on elite feasting, and the reservation of higher-quality roasted meat for these kinds of settings encouraging a greater reliance on the use of non-meaty parts in soups and stews. Guinea pigs, on the
other hand, form a relatively minor part of the diet, but one that varies considerably through time: cuy takes on a greater importance during the EIP, and then again increases in importance throughout the LIP, reaching its highest prevalence (in NISP%, MNI%, and specimen weight) in the Late LIP phase. Interestingly, this upward trend seems to be interrupted by the temporary abandonment of the site during the Middle Horizon, as guinea pig appears to form a smaller component of the diet in the Early LIP phase than in the Late EIP phase.

Deer and other hunted wild animals compose a minor part of the diet at Minspata, supplementing the protein and fat primarily provided by domesticates. Although varying little throughout time, role of wild animals in local diets may be slightly less important during the LIP than during the EIP. Despite the proximity of Minaspata to a large shallow lake which would have provided relatively easy access to fish and birds, fish are nearly absent from the faunal assemblage (although preservation is certainly an issue) and birds are poorly represented. However, faunal diversity (measured by the number of taxa represented in each chronological phase) is highest during the Late Formative Period, when a number of poorly represented wild taxa appear in the archaeological record. Some of these taxa such as the monkey and, probably, canine were not likely to have served as food sources. Taxa diversity is also high during the Late EIP and Late Horizon phases. Under Inca rule, the appropriation of some of the local community’s domestic camelid herds by the Inca state may have encouraged an increased exploitation of wild animals, even as access to domesticated animal meat does not seem to have significantly decreased in the Late Horizon.
Conclusion

Culinary preferences appear to be broadly consistent through time at Minaspata with some minor variations, focused primarily on camelids and maize, with beans, guinea pigs, and a small range of hunted animals (deer, viscacha, tuco-tuco, and birds) providing supplementary sources of animal protein. Maize and camelid animal products (probably both prepared a variety of different ways) provided the basis for a huge bulk of the local diet at Minaspata. Potatoes were also probably consumed, as they form a significant component of highland Andean diets; their absence in the macrobotanical record at Minaspata can probably be explained entirely by low rates of preservation and bias resulting from small sample sizes. Interestingly, amaranths such as quinoa and kiwicha – which would be expected to make up notable, if not substantial, parts of the local diet are nearly absent at Minaspata, and these plants appear to have been unused in local cuisine after the Late Formative Period.

However, while culinary preferences for particular foods may have stayed more or less consistent, some evidence suggests that food preparation practices may have changed at particular points in time. Roasted meat may have been increasingly reserved for special social gatherings, leading to a greater reliance on low-meat bearing camelid elements for everyday consumption, probably prepared by boiling to extract fat and marrow from bones in stews and soups. Maize may have also been prepared differently in the Late LIP and Late Horizon phases, with more of a focus on toasting corn over open flame.
Ubiquity and density measures indicate that maize is best represented during the EIP, is scarce at the beginning of the LIP, and increases in importance steadily until reaching a peak during the Late Horizon under Inca rule. Regionally, maize pollen appears for the first time in lake cores taken from Lake Marcacocha in the Cusco region around 500 BCE (Chepstow-Lusty et al. 1996:831), and carbonized maize cobs were recovered at the site of Marcavalle dating to ca. 200 BCE (Chávez 1980:243–244). Maize also appears at the Late Formative Period site of Yuthu (Davis 2010), dated to 400-100 BCE. Published macrobotanical analyses from Cusco region sites dating to the EIP, MH, and LIP are essentially non-existent, and determining how the trends identified at Minaspata correlate to regional patterns is impossible. However, many sites across the Cusco region were relocated to lower elevation farmlands more suitable for maize production at the beginning of the EIP (Bauer 2004; Covey 2006a, 2014e), and Bélisle has argued that the regional ceramic assemblage introduced during the EIP may indicate an increased emphasis on serving and consuming maize beer (Bélisle 2011, 2015; Bélisle and Quispe-Bustamante 2017).

Maize beer or chicha is obviously a key component in feasting in Wari (Finucane 2009; Goldstein et al. 2006; Moseley et al. 2005; Sayre et al. 2012) and Inca contexts (e.g., Bray 2018; Jennings and Bowser 2008; Murra 1960, 1980) during later periods, although its role during the EIP is less known. However, maize would be expected to be found in higher quantities during periods where other data (such as the ceramic assemblage) indicates that feasting would have played an important sociopolitical role. The ceramic and macrobotanical data at Minaspata does suggest that feasting involving
the serving and consumption of maize beer may have been an active social practice, albeit one that occurred on a smaller scale and perhaps was limited to a primarily elite practice. However, given the likelihood that feasting played an important role during the Late Intermediate Period, the relatively low frequency and density of maize during the early phase of the LIP is interesting.

Variation in the patterns observed for deer, guinea pig, and maize suggest that trends established in the Early Intermediate Period may have been interrupted by the temporary abandonment of Minaspata during the Middle Horizon. Wild hunted animals seem to have played a slightly smaller role during the LIP, suggesting an even greater reliance on domesticated animals, although they did not play a particularly large role during earlier phases either. The frequency of maize and guinea pigs follow similar trajectories, with the appearance of having been “reset” by abandonment during the Middle Horizon, only to increase in importance to significantly higher levels by the end of the LIP.

Although the data from Minaspata is somewhat ambiguous, the observed decrease in the prevalence of camelid elements from meatier parts of the body may follow a similar pattern, as a greater importance is placed on non-meaty elements for daily consumption. Ethnographic and archaeological evidence suggests that this may be related to a greater social role for feasting, and the ceramic assemblage at Minaspata indicate that this was likely the case. The variable rates of guinea pig in the faunal assemblage may also be linked to this as well: as a small but potent source of animal protein and fat, these animals probably would not have served as the primary source of animal meat for the
majority of the population (camelids appear to have served this role throughout all chronological phases), but may have been reserved for special feasting situations, as found today in traditional Andean communities. If true, the collective proportions of maize and guinea pig combined through time may trace the relative importance that feasting played in the sociopolitical structure of Minaspatá.
CHAPTER 8

OBSIDIAN AND LONG-DISTANCE EXCHANGE

Previous chapters have approached community and state formation through a consideration of consumption practices that are primarily local in nature, confined to the communities that produced and used them, and the larger Cusco region in which they were exchanged. However, the consumption of objects obtained through long-distance exchange and interaction are also helpful to consider, as transformations in these patterns through time can shed light on how local and regional configurations were affected by much larger-scale assemblages. One of the most established systematic methods for investigating this issue is through an analysis of the sources from which obsidian was obtained. Although only developed in the 1970’s, investigations of obsidian procurement and distribution patterns in the Andes region has become one of the best methods for understanding long-distance trade patterns. Obsidian is durable through time, ubiquitous across archaeological sites, and requires frequent replacement due to its fragile nature. More importantly, obsidian sources are relatively rare and compositionally distinct, meaning obsidian artifacts recovered in the archaeological record are easily traceable to their sources using chemical analytical techniques such as proton-induced X-ray emission (PIXE), X-ray florescence (XRF), or neutron activation analysis (NAA). This combination of factors makes obsidian sourcing one of the best options for tracing changing long-distance exchange patterns through time.

Although many small obsidian sources had relatively limited distribution in the prehispanic Andes, most of the major sources have been identified (Brooks et al.; Burger
and Glascock 2000; Burger, Asaro, Tratwick, et al. 1998; Burger, Asaro, Stross, et al. 1998; Burger, Schreiber, et al. 1998; Burger et al. 2000, 2006; Craig et al. 2010; Glascock et al. 2007; Rademaker et al. 2013; Tripcevich and Contreras 2011; Tripcevich and MacKay 2012). The three most exploited sources in the south-central Andes were the Quispisisa source, located in central Ayacucho (Burger and Glascock 2000, 2002) which comprises the majority of obsidian artifacts studied from northern and central Peru (Burger et al. 2000:273); the Alca source, from the Cotahuasi Valley in central Arequipa approximately 195 km southwest of Cusco (Burger, Asaro, Stross, et al. 1998; Jennings and Glascock 2002; Rademaker et al. 2013), from which the majority of obsidian identified in the Cusco region comes; and the Chivay source, located in the Colca Valley in eastern Arequipa (Burger, et al. 1998), which has been found most commonly in the Lake Titicaca Basin and adjacent areas throughout all time periods. The reason for the dominance of these sources in the archaeological record is unclear, but some scholars have argued for both the high quality of obsidian from these sources and the geological nature of its occurrence (as more easily accessible obsidian flows, as opposed to smaller nodules embedded in other volcanic rocks) in these locations as factors (e.g., Burger et al. 2000).

In a seminal article, Richard Burger, Karen Mohr-Chavez and Sergio Chavez (2000) traced potential obsidian exchange routes using hundreds of artifacts from dozens of sites across the southern Andes, and argued for a major disruption of trade routes during the Middle Horizon. While obsidian patterns indicate relatively strong relationships between the Cusco region and the Lake Titicaca Basin area prior to the
Middle Horizon, these ties appear to be severed around 600 CE as the Wari Empire expanded from their heartland in Ayacucho and colonized several regions, including the Cusco region. At the same time, obsidian from the Quispisisa source – located near the imperial capital of Huari and the dominant source of that region – appears for the first time in the Cusco area. Likewise, Alca obsidian begins to appear in Ayacucho and other Wari sites for the first time. Obsidian from the Chivay source appears to have been controlled and distributed by Tiwanaku, despite being located in or near Wari territory. This new pattern lasted until the end of the Middle Horizon, when relations between the Lake Titicaca Basin and Cusco were re-established.

While this argument has largely held up, additional studies have called into question the level of control the Wari and Tiwanaku states might have held over obsidian and other long-distance exchange. These more nuanced studies suggested that the regional shifts in procurement patterns were probably more complicated than indicated by the results published by Burger and colleagues (e.g. Bélisle 2011; Craig et al. 2010; Glascock and Giesso 2012; Glascock et al. 2007; Kellett et al. 2013; Jennings and Glascock 2002; Rademaker et al. 2013; Skidmore 2014). The recent projects by Bélisle (2011) and Skidmore (2014) in the Cusco region included obsidian sourcing components and have added significant data for the Middle Horizon, though little new sourcing data for other time periods have been added for the Cusco region since Burger and colleagues’ 2000 study.\(^\text{144}\) The challenge is to refine our understanding of long-distance obsidian

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\(^{144}\) Bélisle (2011:217) included sourcing data for a number of obsidian fragments from the Late Formative and Early Intermediate Periods, combined into one group as “Pre-Middle Horizon.” Davis (2010) also
exchange networks through new data, and to glean insight from these refinements into the social and political nature of trade in the southern Andes through different time periods.

Obsidian was found in numerous contexts across Minaspata. A total of 177 individual fragments were recovered during excavations; although the vast majority of these were debitage fragments with no discernable form or additional flaking, the sample did include 11 small projectile points, ranging in length from 1.2 to 2.1 cm from base to tip (Figure 8.1).\textsuperscript{145} All projectile points dated to the Qotakalli Period or, in a few cases, the later stages of the Late Formative Period. Of the 177 fragments recovered, 155 (87.6\%) were analyzed using the InnovX Alpha Portable X-Ray Fluorescence (pXRF) reader to assess chemical trace elements (including all 11 projectile points), owned by the Field Museum of Chicago’s Elemental Analysis Facility under the custodianship Patrick Ryan Williams\textsuperscript{146}. The sample was initially selected without regard to context or time period, although ultimately only 4 fragments were identified as coming from mixed or disturbed contexts. The remaining 151 fragments were assigned to time periods with high degrees of confidence, based on stratigraphy, diagnostic pottery, and association with radiocarbon dates\textsuperscript{147} (Table 7.1).

\textsuperscript{145}One of these “points” may have been decorative in nature: with deeply serrated edges, a flaring concave base and a rounded tip, and showing no evidence of retouch – rendering it impractical as a projectile point.
\textsuperscript{146}Portable XRF analysis has been found to be a generally dependable method for linking obsidian found in archaeological contexts with its source (Craig et al. 2007), although with a slightly lower level of reliability than other methods such as INAA and LA-ICP-MS (Williams et al. 2012).
\textsuperscript{147}A few contexts were identified as “transitional,” containing diagnostic pottery from two adjacent time periods. In these cases, artifacts from these contexts were assigned to the later time period. Most Inca diagnostic pottery was near the surface and frequently mixed with diagnostic pottery more typical of the Late Intermediate Period, and no “pure” Inca contexts were excavated.
Table 8.1: Quantities of obsidian fragments recovered from Minaspata, organized by time period and source. ("ND" means that a source could not be identified).
The majority of obsidian fragments recovered at Minaspata originated at the Alca source (82.58% of the sample analyzed, or 88.9% of the sample for which a source could be identified), consistent with previous studies for the Cusco region apart from Middle Horizon sites (Bélisle 2011; Burger et al. 2000; Skidmore 2014). The Alca source is the closest to Cusco and appears to have been the primary source for the Cusco region for all periods. It was also distributed more widely throughout the Andes at various points in time (Rademaker et al. 2017). However, an analysis of the distribution of non-Alca sources reveals some interesting, if tentative, patterns.

The Middle Formative Period and Late Formative Period

The earliest radiocarbon date available from Minaspata places the known beginnings of occupation firmly in later part the Middle Formative Period ca. 800 BCE (Chapter 5), although earlier occupations may exist elsewhere on site. Unsurprisingly, all of the obsidian dating to this time period comes from the Alca source, the closest of the three major sources to Cusco. This is consistent with the findings of Burger and colleagues (2000). While the majority of their sample from the first part of the Early

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148 The Alca source actually extends over a large, several-kilometer area in the Cotahuasi Canyon and in the nearby Pucunchu Basin, with dozens of outcroppings. Rademaker and colleagues (2017) have demonstrated six geochemically distinct outcrop groupings from the larger Alca source: Alca-1, Alca-2, Alca-3, Alca-4, Alca-5, and Alca-7. Although Alca-1 seems to be the most heavily exploited throughout prehistory (ibid; Jennings and Glascock 2002), the social significance, if any, of the procurement of obsidian from these different sub-sources is unknown.
Horizon\textsuperscript{149} (c. 800-400 BCE) comes from Marcavalle (n=39), all but 5 of the later samples from this site derive from the Alca source, and the remaining come from an unidentified source. Two samples from Dwyer’s earlier excavations at Minaspata were also analyzed, which also come from the Alca source. Further to the south at the site of Pikicallepata, located near Sicuani in the Vilcanota River Valley, 77\% of the samples are from the Alca source while the remaining 23\% were identified as Chivay. This pattern continues into later time periods and is suggestive of an intermediate zone interacting heavily with both the Lake Titicaca Basin and the Cusco region; the location of Pikicallepata as partway along the major transportation route between these two areas would facilitate the kind of interaction patterns indicated by the existing obsidian sourcing data.

This pattern shifts at Minaspata sometime in the Late Formative Period after 500 BCE. Although the majority of obsidian found in Late Formative contexts at Minaspata still derives from Alca (94.6\% of the samples for which a source was identified), unlike earlier periods, diversification in the obsidian sources appears for the first time. Two fragments originating from Chivay (5.4\%) may be a result of increasing trade with intermediate zones along the Vilcanota River Valley, or perhaps with circum-Titicaca Basin polities directly. As noted by Burger and colleagues (2000:310-311), this period

\textsuperscript{149}The Early Horizon is the period of time in John Rowe’s (1967) original chronology for the entire Andes which has come to designate the spread of iconography from the religious cult based at Chavín de Huantar in the central highlands of Peru. Burger and colleagues presumably used this chronological system to make their data relevant to a larger portion of the Andean culture area, since the Cusco region is only one small component of their larger discussion. However, this cultural phenomenon never seemed to reach the Cusco region, which is why this dissertation has elected use the Cusco regional chronology designed by Bauer (1992, 2004). In this chronology, the Early Horizon is contained within the longer Formative Period; see Chapter 3 for longer discussion.
corresponds with the rise of a powerful religious system around the Lake Titicaca Basin termed the Yaya-Mama Religious Tradition\(^{150}\), named after a distinctive style of stone sculptures found throughout this region and corresponding to the presence of similar sunken temples and ritual paraphernalia at diverse sites in the area (Chávez 1988; Chávez and Young-Sánchez 2004).

Although the patterns for the Cusco region presented by Burger and colleagues shows 45 of 46 samples originating from Alca (with the remaining fragment a rare, unidentified source), they also reveal that roughly 10\% of the samples tested from a series of sites in the Lake Titicaca Basin come from the Alca source, and even higher percentages of Alca obsidian were present at regionally important sites in the circum-Titicaca region such as Pucara and Taraco. The authors suggest that this Alca obsidian arrived at Lake Titicaca region sites through increasing long-distance interaction with the Cusco region (which had long secured access to the Alca obsidian source), rather than through diversifying their access to non-Chivay obsidian sources. This hypothesis also explains the first appearance of Chivay obsidian in the Cusco region. Given the obsidian patterns in previous time periods and the fact that Alca obsidian does not appear prior to the Late Formative Period in the Lake Titicaca Basin, the patterns presented by Burger and colleagues - combined with the new data from Minaspata - suggest that the emergence and expansion of the Yaya-Mama Religious Tradition in the Lake Titicaca Basin may have precipitated the establishment of new political and economic networks,

\(^{150}\) Beginning roughly 800 BCE and ending 200-400 CE (Burger et al. 2000:310-311). Interestingly, an ending date of 200-400 CE corresponds to the replacement of Late Formative pottery styles with the new, radically different Qotakalli style pottery in the Cusco region, around 300 CE, signaling larger possible social and cultural changes on an interregional scale.
including an extension of trade routes (or, possibly, pilgrimage from Cusco to Yaya-Mama religious sites) (Burger et al. 2000:315-318).

**The Early Intermediate Period**

Sourcing data for obsidian from contexts dating to the Early Intermediate Period in Cusco is limited. Although Burger and colleagues combined samples from the later Early Horizon and the Early Intermediate Period in their analysis (a period of time from roughly 600/500 BCE to 600 CE), all of the sites from which obsidian was tested came from Late Formative contexts (as determined by the presence of Chanapata style pottery).

In the Cusco region, Chanapata and Chanapata-Derived style pottery appear to phase out with the appearance of Waru and Qotakalli pottery styles around 300-400 CE. Bélisle tested 21 obsidian fragments from Ak’awillay that came from Late Formative Period and Early Intermediate Period contexts, but were combined due to the small number of earlier contexts excavated (2011:216). She reported that the vast majority of these obsidian fragments originated in Alca, with only a single sample originating from Chivay – a percentage more or less in-line with the results from Minaspata during the Late Formative Period. However, at Minaspata, the percentage of fragments originating from Chivay actually increases to 10.25% during the EIP, suggesting a possible strengthening of pre-existing economic and social ties established with the Lake Titicaca region during

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151 In the Cusco chronology established by Bauer (2004) and used here with some adaptations, this range of time essentially overlaps with the Late Formative Period and the Early Intermediate Period combined.
152 Bélisle (2011) reports Derived Chanapata pottery continuing at the site of Ak’awillay until the beginning of the Middle Horizon, but this pattern seems to be an exception to the larger Cusco area, and is not replicated at Minaspata.
the Late Formative Period. Without more precise chronological control from Ak’awillay and additional data from other sites in the Cusco region for the EIP, the significance of this increase or what it means regarding changing interaction patterns remain to be determined.

Interestingly, two obsidian fragments had a chemical signature correlating with the Quispisisa source, which represents the first examples of this obsidian in the Cusco area prior to the Middle Horizon. The spread of Quispisisa obsidian beyond the central highlands is typically associated with the emergence of Wari state colonialism during the Middle Horizon, and the presence of obsidian from this source may suggest earlier interaction between the Cusco region and the incipient Wari polity. However, drawing firm conclusions with only two examples is difficult. In any case, the obsidian fragments EIP contexts at Minaspata indicate a slight intensification of patterns established in the Late Formative Period, with an increasing proportion of obsidian coming from more diverse, non-Alca sources (15.38%, as opposed to 5.4% in the Late Formative Period).

The Middle Horizon

The paucity of Middle Horizon contexts at Minaspata makes it difficult to assess how the arrival of Wari colonists to the Lucre Basin around 600 CE impacted the exchange patterns in which Minaspata was involved; only one fragment could be firmly

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153 One of these samples came from a mid-EIP context, probably dating approximately between 400 and 500 CE. The other came from Feature R-112, a large boulder-filled pit in located Subunit II-B which stratigraphically dates to the terminal phase of the EIP (Chapter 5). However, this feature contained some pottery dating to the Middle Horizon in addition to earlier styles, and this single obsidian sample may have been deposited sometime after the end of the EIP.
linked to a Middle Horizon context. However, the Middle Horizon is one of the better-researched periods of time for obsidian sourcing in the Cusco region, and an understanding of how the sociopolitical effects of Wari colonization impacted existing exchange relationships can be gained, to some extent, through a review of the existing literature.

Burger and colleagues documented a major shift in the sourcing patterns of the Cusco region during the Middle Horizon (2000). While the majority of the obsidian during previous periods came from the Alca source, with smaller amounts from Chivay and other rare sources yet to be identified, Burger and colleagues found that 41% of the sample tested (13 fragments) from Middle Horizon sites in the Cusco region came from the Quispisisa source, the primary supply for areas further north and the closest source of obsidian for the Wari capital in Ayacucho. This includes all 8 fragments tested from excavated contexts at Pikillacta\(^{154}\) (ibid:329-334). Only 28% of the 32 fragments sampled came from the Alca source, with much of the remainder from smaller sources further to the north, such as Potreropampa and Jampatilla. Furthermore, not a single fragment tested from Cusco sites came from the Chivay source during the Middle Horizon, and no fragments from Lake Titicaca Basin sites were identified as the Alca source— a stark difference from patterns in the Early Intermediate Period. In contrast, Alca obsidian is found for the first time at Wari sites throughout the Andes such as Huari, Jincamocco, and Cerro Baul, albeit in small amounts.

\(^{154}\) One fragment recovered by Burger from a surface context came from the “Andahuaylas A” source, which was later identified as Potreropampa, located in the Department of Apurímac to the northwest of Cusco (Burger et al. 2006).
This evidence indicates a major upheaval in existing exchange relationships on a macro-scale, suggesting that “a radical change in obsidian utilization occurred in this region, a change brought about by Wari imperial organization newly introduced here” (ibid:334). Burger and colleagues argue that the patterns revealed throughout the southern Andes during the Middle Horizon suggest that relatively firm lines were drawn regarding the exploitation of obsidian sources: Wari sites and areas under imperial control relied heavily on obsidian from the Quispisisa source, with a secondary reliance on Alca and smaller sources, while the Chivay source provided much of the obsidian for Tiwanaku and its colonies in Bolivia and southern Peru. Burger and colleagues do note a proliferation of unique sources in new areas as well, however, and posit that this may be due partially to the increased movement of peoples throughout the southern Andes (perhaps at the behest of the Wari or Tiwanaku states) bringing obsidian with them, rather than entirely due to shifts in long-distance trade patterns (ibid:340). Their argument has been broadly supported by other research (e.g., Kellett et al. 2013; Glascock and Giesso 2012).

Additional research specifically in the Cusco region has complicated this interpretation somewhat. At Ak’awillay, Bélisle notes the presence of Quispisisa source obsidian for the first time during the early Middle Horizon – but in a much lower proportion than might be expected (8.49% of the sample, out of 106 total fragments). A greater proportion of the Early-MH sample from Ak’awillay came from the Chivay source (11.32%), with the remaining majority originating at the Alca source (78.3%), indicating that at least some local communities in the Cusco region were able to continue
their existing exchange relationships with the Lake Titicaca Basin, despite Wari presence along the Vilcanota Valley. This pattern may or may not have continued in the later part of the Middle Horizon; although no Quispisisa obsidian was analyzed from late Middle Horizon contexts at Ak’awillay, the sample size was substantially smaller (probably 16 fragments total) and drawing conclusions from this is challenging.

A total of 256 obsidian fragments were also analyzed from the Wari site of Hatun Cotoyuc, part of a complex of sites in the Huaro Valley (Skidmore 2014:237–240). The fragments were divided into the early, middle and late phases of occupation, although no significant shifts in relative proportions of obsidian from different sources were identified through time: for all phases of the Middle Horizon, Quispisisa represented the primary source that was utilized (~60-66%), followed by Alca (~18-24%) and Chivay (~1-9%).155 Despite the fact that the Quispisisa source is more distant from the Cusco region than the Alca and Chivay sources, the high proportion of Quispisisa obsidian found at Hatun Cotuyoc indicates that Wari exchange networks played a predominant role in filling local obsidian needs of the colony throughout the Middle Horizon. However, the Wari exchange networks never fully replaced other trade networks unconnected to the Wari state, which were probably largely in place prior to the Wari colonization of the Cusco region.

This existing research, when taken as a whole, suggests that Wari obsidian exchange networks tightly connected the Ayacucho heartland to major colonies in the Cusco region, particularly Pikillacta and Huaro. However, the Wari state either could not

155 21 fragments analyzed by Skidmore (2014) were identified as outliers and may originate from minor sources of obsidian in Peru, but were not discussed (ibid:238)
or were not interested in fully restricting pre-existing exchange networks with local peoples. The presence of Quispisisa obsidian in smaller amounts at local sites such as Ak’awillay may be due to indirect secondary or tertiary exchange relationships on a more local scale, potentially with the Wari colonies or intermediary sites.\textsuperscript{156} The greater diversity of sources appearing in Cusco-region sites presented by Burger and colleagues (2000) may be partially due to the increased movement of populations across the southern Andes due to imperial reorganization, but we should also consider that the sociopolitical developments of the Middle Horizon may have led to an overall increase in interregional exchange, which may not have been state-directed (e.g., Jennings 2010, 2011).

The Late Intermediate Period and the Late Horizon

In contrast to the data available for obsidian sourcing in the Cusco region from the Middle Horizon, the following time periods have attracted far less scholarly interest. Burger and colleagues tested seven samples from the greater Cusco region dating to the Late Intermediate Period and the Late Horizon combined. Of these seven fragments, four were surface finds from four separate sites in the Cusco Valley, originating in Alca; two fragments from Machu Picchu came from Chivay; and one, found on the surface at Choquepukio in the Lucre Basin, was from an unidentified source. No obsidian tested

\textsuperscript{156} As argued in Chapter 3, Ak’awillay may be slightly atypical for the greater region for various reasons, particularly its geographical location, and higher proportions of Quispisisa obsidian were possibly distributed to local sites closer to Pikillacta and Huarco. The data presented by Burger and colleagues (2000) suggest that this may be the case, but the sample sizes for any individual site are so small as to make reliable interpretation difficult.
was found to be from the Quispisasa source. Although these results are not particularly robust, the reappearance of Chivay obsidian in the Cusco region – and, conversely, small amounts of Alca source obsidian in the Lake Titicaca Basin – led the authors to tentatively argue for a return to pre-Middle Horizon patterns of interregional obsidian exchange (2000:345).

The results from Minaspata, perhaps unsurprisingly, complicate this image somewhat. While most of the obsidian recovered from Late Intermediate Period and the Late Horizon come from the Alca source (81.0%, n=37), consistent with earlier time periods, little comes from Chivay (5.4%, n=2). In contrast, a greater proportion comes from the Quispisasa source (13.51%, n=5). More research is clearly needed, as these sample sizes are small, but these results appear to contradict the tentative argument put forth by Burger and colleagues. Rather than resuming pre-Middle Horizon obsidian exchange patterns, Minaspata seems to have maintained long-distance economic relations with groups further northwest in the Ayacucho region – relationships probably established in the Middle Horizon, possibly at the behest of Wari state institutions. That these relations appear to have continued in the absence of the Wari state suggests they may have been maintained and practiced independent of political direction, even if they were potentially instituted as a direct result of Wari colonization.

However, as has been argued, much of the material culture found in the Lucre Basin during the Late Intermediate Period appears to be Wari-influenced in various ways, and the long period of Wari occupation in the Lucre Basin may have led these ethnic groups to embrace and maintain some aspects of Wari cultural identity, distorted and
partial as it may have been. This pattern appears to have been unique in the Cusco region, and the Pinagua and Muina ethnic groups may have preferentially maintained these socioeconomic ties with groups further north in contrast to the economic ties of the rest of the region. If so, the relatively high proportion of obsidian from the Quispisisa source found at Minaspata would not be reflected at other sites in the region. However, since little obsidian has been chemically sourced from the Late Intermediate Period or the Late Horizon at sites elsewhere in Cusco (other than the few presented by Burger and colleagues), determining how well the patterns at Minaspata are repeated elsewhere in the Cusco region is impossible without additional research.

**Conclusion**

The results from Minaspata are largely consistent with previous studies, showing that Alca in the northern Cotahuasi Valley was the dominant source of obsidian for the Cusco region from the earliest sedentary occupations in the area. At Minaspata, this long-distance relationship never changes significantly: the Alca source composes approximately 80-96% of all obsidian recovered during the 2013 excavations in any given time period.

These long-distance exchange patterns begin to diversify slightly for the first time in the Late Formative Period after 500 BCE, with the first samples of obsidian originating from Chivay – the dominant source of obsidian for the high-altitude altiplano area of southern Peru and Bolivia around Lake Titicaca throughout prehistory (e.g., Tripcevich and MacKay 2012). This may be the related to the early development of religious and
political complexity represented by the Yaya-Mama Religious Tradition in the altiplano, and the socio-economic outreach such changes may have precipitated. These patterns intensify in the Early Intermediate Period, with increasing obsidian exchange between the Lake Titicaca region and the Cusco area and the earliest occurrence of obsidian from the Quispisisa source located in Ayacucho. While Quispisisa obsidian in the Cusco region is generally associated with the arrival of the Wari state ca. 600 CE, recent research from Ak’awillay and Hatan Cotoyuc suggest that this mainly affected Wari colonies, and that local communities maintained their existing exchange relationships with the Lake Titicaca region and the Cotahuasi Valley to a large extent.

Following the collapse of the Wari colonies in the Cusco region, the obsidian patterns at Minaspata show some difference when compared to the limited previous research in the Cusco region. Rather than reverting entirely to the exchange relationships that existed prior to the Middle Horizon, the Late Intermediate Period community at Minaspata continued to obtain small amounts of obsidian from both the Chivay and Quispisisa sources. While the quantities are small and further research is needed, at least in the Lucre Basin, the Wari colonization seems to have more permanently affected long-distance exchange routes than previously assumed. However, at this point, it is unclear whether Minaspata represents an exception to the rest of the Cusco region, or whether this pattern appears from a lack of research elsewhere during the LIP and Late Horizon.

Of course, while a useful tool for understanding long-distance economic exchange, obsidian sourcing is not necessarily indicative of all exchange patterns, and the pathways of obsidian distribution may be more complicated and less direct than we
would assume. Other social relationships may have been deemed more important in certain situations. For example, the Inca elite drew explicit connections to the Lake Titicaca region, situating the mythical origins of themselves and the Andean world as a whole in Lake Titicaca itself; and the altiplano was, by most accounts, the first area outside of Cusco to which the Inca Empire expanded (D’Altroy 2015). Most accounts also suggest that the altiplano was the first region targeted by the imperial ambitions of the Inca state, and a possible strengthening of the socioeconomic relationships between these two areas during the later LIP may not be revealed by the obsidian exchange networks.

Nevertheless, these data are illuminating when we consider other artifact data related to consumption and the formation of a culturally and politically coherent regional community in Cusco. Much like the patterns suggested by the ceramics, architecture, and other material culture, Minaspata and the Lucre Basin appear to diverge slightly from the cultural trajectory of the larger region only following the arrival of the Wari state colonies. Following their abandonment, the ethnic groups of the Lucre Basin seem caught between an identity shared with the rest of the Cusco region, and one formed from a social memory of the Wari state.
CHAPTER 9

ASSEMBLAGES AT MULTIPLE SCALES:
MINASPATA, THE CUSCO REGION, AND INCA STATE EMERGENCE

The Cusco regional community emerged as an assemblage at multiple scales from affective relations that continually changed over 1000 years of sociocultural, political, and material interaction. These multiple scales include short, medium, and long scales of time, but also different scales of place, in the form of the communities of Minaspata, the Lucre Basin, and the Cusco region. Instead of a linear process, following inevitable metahistorical structures of change, regional community formation was emergent, contingent, and multi-causal, constantly transforming and reconfiguring through forces of territorialization and homogenization acting to assemble a large-scale coherent and self-recognizing public, despite other forces acting to deterritorialize the larger region by hardening boundaries on a more local scale. The introduction of Wari state colonization to the Cusco region had significant, long-term effects which shaped the eventual emergence of the Inca state, sending the Lucre Basin on a different historical trajectory from the rest of the region and interrupting the regional territorialization that had begun to coalesce in the Formative and Early Intermediate Periods.

The balkanization of different areas of the Cusco region following the collapse of the Wari state led to some conflict between communities (Bauer and Covey 2002), serving to territorialize and strengthen the relations of local ethnic groups in smaller-scale communities, such as the Pinagua and Muina in the Lucre Basin. These processes acted to harden the social, cultural, and political boundaries separating them from other
communities in the region. However, the result was not full fragmentation of the regional community. The persistence and durability of some components from earlier historical assemblages of community continued through the disruption brought about at the end of the Middle Horizon. Similar material practices, sociocultural orders, and modes of interacting with the non-human world were transformed, but not fully deterritorialized and replaced. In particular, the forms of political practice to which the Cusco region was exposed through Wari colonization appears to have percolated into local assemblages in various ways, albeit to different degrees in different areas, leading to the reconfiguration of assemblages of political authority. This amplified and extended existing practices of commensal and ritual feasting centered around assemblages of maize, meat (both camelid and guinea pig), and particular forms of pottery (especially at Minaspata); repeated construction of buildings and larger-scale community projects of landscape modification; and the ritual veneration of ancestors and huacas. Combined with repeated acts of violence and warfare, these relational assemblages of material and community practice created processes of competition in particular modes of accumulating power, labor and resources, and claims to political authority that set in motion the emergence of Inca sovereignty and the formation of a state heartland.

The Cusco Region through Time

Many long-lasting patterns of consumption at Minaspata emerged in the Formative Period, including those based on the exploitation of domesticated and locally available resources, such as maize, beans, camelid, deer, guinea pig, and probably
potatoes. These consumption patterns mirror those present elsewhere in the region at the sites of Marcavalle, Yuthu, and Ak’awillay, with the apparent exception of quinoa, which is well-represented at these other Late Formative Period sites but was not recovered at Minaspata, suggesting some possible cultural differences rooted in early phases of occupation. Long distance exchange networks facilitated access to coca in the montaña and obsidian from the Alca source in the Cotahuasi Valley. Overall, these components proved enduring and formed the foundational bases for the assemblage of the Cusco regional community.

Modes and forms of material culture and practice appear to be broadly consistent across the Cusco region, with relatively minor differences in the production and decoration of some ceramics. The mediatory role of these vessels is profound, since by acting as containers they permitted the formation and reproduction of particular relationships and practices of consumption across a wide area (Jervis 2013:229). These relationships, in turn, engaged the vessels in the process of change and continuity. Other material objects and configurations acted in similar manners. Part of the efficacy of such objects lies in their durable configurations of matter; objects of stone and ceramic, for example, can outlast the lives of the people who made and used them. But their efficacy also lies in their ability to act as “citations” within particular categories or assemblages (Jones 2012). Craft production entails an embodied process of improvisation with vibrant materials and historical assemblages, and objects are not mechanically reproduced as identical copies. The form of an object is not pre-defined, nor an exact copy of existing objects. Instead, form emerges through embodied knowledge and improvisation on the
part of the craftsperson, with reference to – or “citation” of – one or more originals. The final forms of a category of objects also result from the vibrancy and potential capacities for difference in the matter of things themselves as they are brought into being, and from the different relations in which they are entangled. This process of citation can act as a territorializing process through time and across space as materials are reproduced with reference to historically existing and individuated modes of consumption, while still accumulating small changes which may ultimately lead to “phase transitions” and the emergence of new configurations.

Communities during the Formative Period were generally small and dispersed, although the emergence of a few larger communities indicate that some places became particularly important in the region during this period. Burials are undifferentiated for the most part, placed under floors and associated with building construction, elevating values of domesticity and affirming egalitarianism in the display of mortuary practices. The Cusco region may have established some long-distance patterns of interaction with the cultural and religious configurations present in the Lake Titicaca Basin during this time (Chávez 1977; Zapata 1998), but more research needs to be done to establish the intensity and form of these relationships.

The relatively low level of social complexity evident during the Formative Period in the Cusco region is related to the apparent durability of these social and material configurations, in which new material assemblages (such as the Chanapata pottery style) emerge on the scale of centuries and are relatively stable for long periods of time. Explaining the durability of this form of sociality, which lasted over a thousand years, as
the product of human will and strategy is difficult. Instead, this form of historical reproduction lies in the efficacy of shared configurations of material practice, and ways in which humans interacted with each other and with the non-human world. The evidence suggests a regional community not bound by relations of similarity, but by a lack of perceived difference between localities, enabling relations of affect to loosely territorialize communities together into a coherent public from an early stage.

A major transformation from this long-lasting, durable assemblage defines the beginning of the Early Intermediate Period at Minaspata and in the Cusco region more generally. The causes and nature of this transition are still unknown. A “phase transition” of small changes in material practice accumulating over time during the Formative Period may have occurred, eventually reaching a tipping point leading to the rapid reorganization of settlement patterns, new material culture, and ways of interacting with members of the local and regional community. Alternatively, some scholars have speculated that the cause may be the introduction of new assemblages to the region in the form of new groups of people migrating from elsewhere. Even if the latter were the case, however, this phenomenon should not be treated as a full-scale population replacement (as some communities do not appear to have been “replaced,” such as the site of Ak’awillay). Rather, in either case, the introduction of a new component into the larger-scale regional assemblage spread through processes of interaction and material entanglement, as new forms of engagement with the non-human world acted through objects mediating sentiments of captivation and desire by establishing a highly visible lexicon of symbolic and material practice.
Ceramic patterns of the EIP are created through the introduction of new vessel forms and decorative techniques, as well as ceramic pastes and firing patterns. Many Formative Period settlements are abandoned, with new settlements proliferating in lower elevation ecozones more suitable for maize production, while some others, such as Minaspata – already situated at lower elevations close to productive farmland – rapidly adopt these new modes of social and material practice. At Minaspata, areas of occupation expand to new areas of the site during the EIP, associated with thick deposits of cultural material and the frequent construction and reconfiguration of spaces. A few communities, such as Ak’awillay, transform more slowly, with Qotakalli and other EIP ceramic styles operating alongside Late Formative material assemblages, presumably in complementary roles. These different responses suggest a social assemblage focused on localization, but one that occurred within the context of a larger-scale regional transformation, as each community was forced to engage with these changes to greater or lesser degrees.

Qotakalli style pottery is found at many large and small sites across the region: although the Cusco Basin appears to be one major center of production, other sites may have produced these ceramic vessels as well, judging by the diversity of quality and decorative techniques within this style. These ceramics acted as what Latour (1999:70–71) called a “circulating referent,” moving between communities and proliferating, drawing communities into closer relations through material practice and acting as a territorializing process for the regional community. The ability of pottery to move through exchange and transport – an essential capacity of mobile material culture – enabled specific vessels to become parts of other community assemblages through acts of
exchange, use, and deposition. However, the mobility of these objects is not their only capacity for territorialization: as they move, they carry with them some of the associated affects and relations, beliefs, meanings, and values. Not only does the production of objects within particular categories or styles involve citation, but the practices in which they are entangled are also cited as the objects circulate and proliferate.

This is how materials can contribute to the territorialization of regional communities – not only through material practice, but by carrying along cultural meanings, ideologies, and notions of social and cosmological order. While sometimes transformed when entering new assemblages, those objects do not enter as mere configurations of matter stripped of meaning and associations. Other times the circulation of these objects creates pathways for the transfer and communication of these shared meanings and experiences by establishing networks of interaction, made durable through repeated engagements with the same object (or string of objects) through exchange, ritual, and performance. In this way, materials affect the world around them, acting as mediators for processes of assemblage, continuity and change (rather than just reflecting such processes), enabling assemblages to reach out and spread and transform other assemblages, drawing them into larger-scale configurations even as they act to deterritorialize existing components.

How Qotakalli style ceramics were transformed as they entered new assemblages depended partly on the strength of existing associations, and on the similarity of originating assemblages to the ones they entered. They were not simply mediators acting in a process of cultural diffusion or assimilation: the degree to which the “sticky”
associations, meanings, and practices were translated into communities first encountering them depended on whether they made sense in local contexts (e.g., Van Dommelen 1997; van Dommelen and Rowlands 2012). However, the presence of similar objects, found in similar archaeological contexts and implicated in similar configurations of community would suggest that they succeeded in territorializing the larger-scale regional community in ways beyond the reach of the objects themselves.

The settlement pattern shifts and transformations in regional ceramic assemblages suggest a focus on producing and consuming maize-based products that is distinct from consumption patterns during the Late Formative Period. Many of the vessel forms of Qotakalli pottery (and other EIP styles) are concerned with serving food and beverages to small groups of people, but in a manner that surpasses family or kin-based modes of daily consumption. The collective range of vessel forms and sizes, when considered alongside other transformations marking the EIP, may indicate the emergence of small-scale feasting practices facilitated by this new form of material culture. The contexts of these feasting events is unclear, but the ceramic assemblage at Minaspata – composed primarily of small and medium-sized concave vessels ideally suited for consuming liquid-based substances, but largely lacking in large cooking and serving vessels, as well as large-restricted neck jars and pitchers involved in the production and serving of chicha – suggests that the ability to serve large quantities was less important than the ability to serve particular kinds of food and beverage. These feasts may have been performative events between members of the same community meant to establish and reinforce asymmetrical relations of power and authority (predicated on values of reciprocity and
obligation – what Dietler (2001) called “patron-role feasting”). Another possibility is that they occurred between high-status individuals of a community or between different communities, intended to establish bonds of affective reciprocity between locales even as they cut away some members from the larger community through restricted participation. More research into the contexts and configurations of EIP sites in the Cusco region is needed to resolve this issue.

Regardless, these feasting events tied together different components, including pottery, maize, and meat (especially camelid, but guinea pigs also become more prominent during the EIP at Minaspata) through affective relations into new assemblages, which engendered and affected human participants in different ways through experiences of taste, consumption, and participation. These components came together through specific historical processes, which clearly involved explicit choices being made by the people involved with them. But these processes also went beyond the choices they made, bringing together other connections and meanings, drawing on traditions of practice, and having affective consequences for others involved that might have been different than intended (Harris 2017:132). The places people lived in and passed through were also shaped and sculpted by these plants and animals, as they reconfigured their settlement patterns and local environments through terracing, canalization, and other changes promoting the intensification and territorialization of these assemblages of interaction and dependence. In some cases, these components became even more active constituents and mediators of community assemblages, through the involvement in public ceremonies,
rituals, and feasting events, which acted to tie communities together through shared experiences.

Other Formative Period assemblages were transformed, specifically long-distance networks of exchange and interaction, but not deterritorialized. Relationships with the Lake Titicaca Basin continued, evident in the form of Muyu Orco style ceramics in small quantities at several larger sites, and small amounts of incised *incensarios* spread across the Cusco region. Most obsidian recovered from Minaspata and other EIP continued to come from the Alca source, with small quantities from the Chivay source entering the material assemblage at Minaspata.

The arrival of a new large-scale assemblage into the Cusco region at the beginning of the Middle Horizon, in the form of colonies established at the sites of Pikillacta and the Huar Valley, had major disruptive effects on these areas. Many existing communities in the Lucre Basin may have been partially depopulated (Bauer et al. 2019), and Minaspata was nearly abandoned.\(^{157}\) This development raises the questions of where the population of Minaspata went, and why they left. Although speculative at this point, two hypotheses can be proposed. The first is that this depopulation represents communities splitting and leaving the basin and settling elsewhere in the Cusco region, perhaps due to excessive demands for labor for the construction of the site of Pikillacta (ibid). The other possibility is that they were relocated by the Wari state, either forcibly or voluntarily, drawn into participating in projects of Wari sovereignty and hegemony. In

\(^{157}\) While the site of Choquepukio does not appear to have been abandoned during the Middle Horizon, as a Wari structure has been reported by Gibaja Oviedo (2016), the nature and scale of the occupation is still unclear.
this scenario, the community living at Minaspata may have been relocated to labor camps around Pikillacta, contributing to its construction or, more likely, to the Huaro Valley.

Evidence for this latter scenario is found in the characteristics of Lucre style ceramics during the LIP, which bear resemblances to Wari pottery in the use of particular vessel forms, designs, and motifs, but is distinct in fabric, composition, and execution. In some cases, Lucre style ceramics bear a closer resemblance to Middle Horizon “Local Wari” ceramics, a low-quality domestic ware described by Skidmore at the site of Hatun Cotoyuc in the Huaro Valley (2014:297–300). These ceramics represent a sizeable proportion of the overall assemblage (17.34%) (ibid: 296), and are described as decorated in variants of classic Wari style motifs on a variety of paste and fabric types, the majority of which are orange or red in color (but sometimes brown, gray, or pink) and often slipped orange to red. Local Wari pottery at the site of Hatun Cotoyuc demonstrates a considerable range of variability (Skidmore 2014:356–365), and overall has the character of ceramics meant to mimic aspects of Wari state pottery, but without the skill or knowledge (or, perhaps, social agency) to fully replicate it.

Jennings has noted that the complex of Wari sites in the Huaro Valley has the character more of a “frontier town” than an administrative site (2006:273; though see Glowacki 2002; Glowacki and McEwan 2001), which suggests that people other than colonists from the Wari heartland may have lived there. While speculative, local populations at Minaspata and other sites in the Lucre Basin may have been relocated to the Huaro Valley where they were incorporated into Wari state assemblages, participating in Wari society and adopting some cultural elements, but a distinction between “pure”
Wari and local groups was maintained. This kind of entanglement might be expected in cases where cultural hybridity emerges through colonial contact and the co-presence of unequal sets of norms and values (Bakhtin 1981; Bhabha 1994; Hahn 2012; Stockhammer 2012; van Dommelen 2005; van Dommelen and Rowlands 2012). Central to this concept of cultural hybridity is the “in-betweenness” of people and their actions, and the idea of “ambivalence,” which refers to the colonial desire to incorporate subjects into hegemonic forms of cultural practice, while still maintaining a degree of separation and difference (Bhabha 1994; Comaroff 1998; Comaroff and Comaroff 1991; Hahn 2012; Stockhammer 2012; van Dommelen 2006). Material culture is a critical component of practices of hybridization in colonial encounters, acting as a fundamental tool of colonial engagement and control, as well as a catalyst for desire (Dietler 2010). The characteristics of Local Wari ceramics at the site of Hatun Cotoyuc may well fit this form of colonial material engagement. The historical assemblages in which Local Wari ceramics were entangled were also carried to the sites of Choquepukio and Minaspata (undergoing transformations in the process, leading to the emergence of Lucre style pottery) when these groups resettled at in the Lucre Basin following the collapse of the Wari state.

The Wari colonial strategies in the Cusco region were most strongly focused on the areas adjacent to the Vilcanota River, and the Wari state did not appear to be interested in (or capable of) annexing and controlling the entire region. But Wari colonists did not avoid engaging with the broader region, drawing some communities into affective participation with Wari ideological, cultural, and economic spheres. This
appears to have been done through two modes of engagement. First, excavations at Pikillacta recovered large amounts of ceramic sherds belonging to bowls, polychrome drinking vessels, and large globular jars used to make and serve chicha. These patterns are indicative of feasting events, and the Wari state probably engaged in commensal and ritual feasting with local elites to establish asymmetrical relations of power through the idiom of generosity and reciprocity (Cook and Glowacki 2003). Examples of this practice are also known in other parts of the Andes at different periods in time (e.g., Bray 2003).

The second manner in which the Wari state engaged with local communities in the Cusco region was through the mediation of locally-produced Araway/Wamanga style pottery. The efficacy of these vessels lay in their ability to enable local communities to engage with the Wari state as an assemblage of spectacle and desire, rather than one of conquest and domination, while still maintaining a sense of local identity (Fullen 2015). By allowing – perhaps even encouraging – this style of pottery to enter the domain of local production and use, the Wari state promoted a form of cultural commitment (however minor) to the Wari state assemblage, and the benefits it afforded local groups, without a complete re-mapping of the local assemblages of community.

While daily life in these communities outside of the Lucre Basin may have continued much as it had prior to the arrival of Wari colonies, continual interaction with these communities over four centuries had lasting effects. The appropriation of design elements from Araway/Wamanga style pots into LIP pottery assemblages is one example of this, but these emergent effects are not limited to material objects. The increasing levels of social complexity and competition leading to the emergence of the Inca state
during the Late Intermediate Period, along with the similarities in Wari and Inca pottery assemblages (Cook and Glowacki 2003), suggests that – at the very least – centuries of low-level interaction with the Wari state reconfigured local relations and conceptions of power and political authority and the ways in which these relations are actualized, consolidated, and enforced through material elements.

Of course, these effects were different, and more pronounced, in the Lucre Basin. The people who returned to Minaspata following the collapse of the Wari state structured their engagement with the material world in ways that directly referenced Wari material and social assemblages. Obsidian obtained through long-distance exchange continued to come primarily from the Alca and Chivay sources, but also included small amounts of obsidian from the Quispisisa source – a legacy of Wari colonization. However, these communities seemed either uninterested or unable to fully replicate Wari sociocultural configurations, apparently lacking the embodied knowledge and resources necessary to do so. Political life at Choquepukio appears to have consisted of large-scale public feasting events centered around the ritual worship of local *huacas* and ancestors, whose bodies were entombed in the walls of monumental public buildings (McEwan 2006; McEwan et al. 2002, 2005). The practices which reproduced sociopolitical life at Minaspata are less clear, but similar practices are likely, and the ceramic fragments recovered from Minaspata suggests that public feasting on a large scale was also a critical component. The proportion of the recovered pottery assemblage composed of restricted-neck jars and pitchers, used primarily for preparing and serving fermented *chicha*, increased substantially during the Late Intermediate Period, and the size of these vessels
is considerably larger than in earlier periods as well. Other serving vessels, such as cups and open straight-sided bowls, are also much more prevalent. The large size and composition of vessel forms suggests a form of feasting of a fundamentally different kind than likely occurred during the EIP: rather than focused on serving smaller groups, these feasts seem to be designed for large groups participating in community-scale public events in which the serving of huge amounts of chicha was a crucial and necessary component.

Along similar lines, the importance of maize – the main ingredient of chicha – became most pronounced throughout the LIP, reaching its highest representation in the archaeological record at Minaspata during the late LIP. Guinea pigs, probably an animal consumed relatively rarely and only at special events, also increase substantially compared to earlier periods and also reach their representation in the same phase (although the majority of meat consumed at Minaspata continued to be camelid).

Together, these elements played critical roles in mediating social and political life at Minaspata. These feasting events would have served to territorialize the local community assemblages, emphasizing the affective bonds through shared participation in ritual and ceremonial events and drawing clear distinctions between in-groups and out-groups. They also would have produced and reinforced hierarchical social and class distinctions within the community, naturalizing and objectifying relations of inequality in power and political authority and conditioning subjects within affective fields as participants with different roles, rights, obligations, duties, and agencies.
The apparent increase in violent conflict during the LIP would have also acted to territorialize local communities and areas at the expense of regional integration, hardening community boundaries and identities based on difference. Related practices, such as participating in raids or the defense of community territories, and the construction of community projects involved in defense (such as the large wall encompassing part of the site of Minaspata), would have also acted to tighten the affective bonds of community through the shared experience of violence and labor. While these processes territorialized communities on a local scale, they were constantly undermined by the deterritorializing effects of exchange, alliance, and interaction which brought the regional community to the fore. These processes of exchange and interaction brought increasing amounts of Killke and other pottery styles to Minaspata and other sites in the Lucre Basin. Aspects of these non-local material assemblages were even appropriated through the partial citation of Killke style design motifs on Lucre A pottery, increasing in proportion as the relations characterizing regional community formation increased in density throughout the LIP.

In other areas of the Cusco region, some people reacted to the collapse and abandonment of Wari colonies by actively maintaining preexisting socioeconomic and political practices; others, by abandoning old towns and villages and establishing new ones, focused on different economic strategies. Yet despite an apparent focus on the localization of political authority situated in smaller-scale communities and centered around the practices of ancestor worship (Isbell 1997; Kosiba 2010, 2011), components of a larger-scale, regional assemblage of community persisted. This sociopolitical regional framework emerged out of broadly similar and historically durable cultural and
political practices and mutually recognizable ways of expressing and performing local authority. This self-recognizing public proved to be enduring despite Wari state colonization and the balkanization that emerged after its collapse, bound by the common ways that people experienced, imagined, and interacted with their social and physical landscapes.

Over time, the expanding Inca polity in the Cusco Basin gained enough political, economic, and social power to transform the entire region into the Inca heartland. The hegemonic projects mobilized by the Inca state to enforce a claim of sovereignty over the region drew from the pre-existing social, cultural, and political assemblages which broadly unified the regional community. These components included elements of consumption practices, most notably the feasting events which characterized sociopolitical life in the Lucre Basin and across the larger area, but also included related elements such as the material forms of ceramic vessels and the processing and consumption of specific plants and animals in particular ways. This may have included the specific appropriation of feasting practices and material assemblages from the Lucre Basin. Some scholars have argued that various elements of the Inca ceramic style were rooted in the Wari ceramic assemblage (Cook and Glowacki 2003), and the Inca conquest of the Lucre Basin may have provided an entry point for the transfer of these elements, considering the similarities in vessel size, form, and decoration between Wari and Lucre style ceramics (especially when compared to Killke and other LIP styles across the region), as well as the similarities in paste composition and production technology between Lucre and Inca pottery (e.g., Ixer et al. 2014). Maize, camelids, and guinea pigs,
along with particular ceramic vessels (especially those associated with serving corn-based meals, meat, and above all, *chicha*) accompanied this appropriation, elevated to critical components of Inca statecraft.

Intermittent violence and conflict during the LIP may have served to territorialize local communities by hardening their boundaries and highlighting perceived differences in community and territory. In a contradictory fashion, however, conflict may have also helped bring these communities together into a regional community under the sovereignty of the Inca state. Archaeological and ethnographic data suggest that the levels of violence were far less than in some other regions of the south-central Andes during the LIP (see Bauer and Smit 2015; Covey 2008). This moderate level of conflict may have been instrumental, as it was not so endemic as to destabilize or destroy the entirety of the community assemblages, and as a result, created structured forms of violence and military organization without resulting in communities so territorialized and cut away from the region that they could not be overcome through exchange, alliance, and forceful integration under the sovereignty of the Inca state. Ultimately, these structures of physical violence were a necessary component in the transformation of political authority into sovereignty.

However, the process of forging political subjects was not just one of conquest. It was, fundamentally, a process of conversion. Important places were not left to continue as before, nominally under the control of the Inca state; nor were they simply destroyed and replaced with recognizable Inca architecture, plazas, and storage facilities. Instead they were transformed into specifically Inca places, and in the process, people were
repositioned according to an ideology of absolute social difference between Inca and non-Inca. For the Incas, place transformation and processes of social conversion were intertwined (Kosiba 2012:104): the goal was not to destroy the places that local peoples recognized as sources of social value, but to translate their value into an Inca idiom and, in doing so, put local people into their “correct” places (ibid:121).

This process of conversion was enacted not simply through the destruction of local places and the construction of new Inca structures, but – at least partly – through ritualized performance. At the site of Choquepukio, for example, institutional structures were burned and ritual offerings were interred next to a local stone huaca when subsumed within the Inca state (McEwan 2006; McEwan et al. 2002). Similar processes have been documented at the site of W’ata and other archaeological sites around the region which were occupied during the LIP (Kosiba 2012; see also Covey 2006; Kendall 1996; Kosiba 2010). At Minaspata, valuable ceramic vessels were destroyed, burned, and interred in a single event as part of the process of converting Muina spaces into Inca ones, accompanied by the destruction and burial of LIP structures under a terrace which created a locus of activity for Inca craft production. In addition, Inca material culture, especially ceramics, inundated the community during the Late Horizon, along with new buildings, platforms, ritual spaces, and chullpas.158 The construction of new chullpas within the space of the site of Minaspata, located among the buildings rather than separated from the living areas, may have been especially important for this process.

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158 Several chullpas were constructed around Minaspata, which were remarkably similar in construction style, form, and dimensions, suggesting they were constructed during a single chronological phase. A few of these chullpas were radiocarbon dated to the Late Horizon (Appendix A).
These small burial towers are intimately associated with ancestry and claims of collective land ownership, and served as critical loci for ritual veneration that continually territorialized community assemblages (Bongers et al. 2012; Isbell 1997; Nielsen 2008). By emplacing Inca *chullpas* in and around communities, the Inca made specific claims of ownership that extended into history, subjugating these places as well as the people living in them and projecting their sovereignty into the timeless past.

Around the Lucre Basin, replicating parallel transformations elsewhere in the Cusco region, the landscape was transformed through the construction of new terraces and (possibly) canals (Bauer et al. 2019), buildings, and roads. The collective effect of these projects was to convert the social and physical landscape from one which emplaced and actualized affective fields of long-standing, localized Pinagua and Muina independence, to a landscape of Inca sovereignty and domination. Conversion and transformation of locally important places was a critical component of the Inca hegemonic project, serving to subjugate the potent animating forces of these places even as they situated the newly established human subjects in a rigid social order. These processes occurred through the enactment of material components on the landscape, altering daily patterns, routines, and experiences, from which emerged new affective fields working to secure and reproduce Inca sovereignty. However, the Inca hegemonic project, and specifically these acts of conversion, was effective only because they were intelligible to the human subjects living in these places.
Conclusion

Creating a politically integrated Inca heartland took effortful assembling, through large-scale performative feasting, processes of place conversion, the codification of new social categories, new material technologies and assemblages, symbolic and physical violence, and other components of the Inca hegemonic project. However, these projects were enacted through asymmetrical interactions with what was still a regional community of intensely intersecting localities, which recognized each other as a potentially coherent public via particular practices of authority; the consumption of plants, animals, and beverages; particular modes of food preparation and serving; and a common cultural and cosmological framework. These shared sociocultural frameworks, involving material and expressive components territorialized into assemblages over multiple scales of time, enabled the Inca claim to sovereignty over the Cusco region.

Ultimately, treating communities, states, and other social entities as assemblages means that they are open-ended, emergent, and multiscalar entities, ontologically real with effects on the world around them that are irreducible to their constituent parts, but not bounded totalities with predetermined or predictable trajectories. They emerge through the long-term, historically individuated processes of assemblage, connected through the affective relations of exteriority and interaction, which act to territorialize and destabilize these assemblages – often simultaneously. Assemblages also create space for the efficacy and vibrancy of the material world to emerge as powerful actants in their own right. Such a realignment resolves many of the contradictions of attempting to understand the past though modern Western ontological frameworks. It also resituated
questions of state formation towards investigating why particular states took the forms that they did, and towards inquiring into the processes that led to mechanisms of power, authority, and sovereignty to emerge and intersect in the ways that they did, over the *longue durée*. Turning towards an archaeology of assemblages is, in the end, a way of reconfiguring our understanding of history, but one that I believe enables a richer, more complete understanding of the past.
APPENDIX A

RADIOCARBON DATES, CALIBRATION, AND ANALYSIS

This appendix will focus on presenting and analyzing the radiocarbon dates taken during fieldwork at Minaspata. The first section below, “Radiocarbon Calibration Curves,” will discuss the different calibration methods available, and specifically whether the calibration curves pertaining to the Northern Hemisphere or Southern Hemisphere atmospheres is more appropriate to use for this project.

The next section, “Radiocarbon Dates and Calibrations,” will present the date ranges and individual plots from standard calibration of all radiocarbon dates taken from excavation.

The third section, “Outlier Analysis,” discusses the probable outlier status of four of these dates, meaning that the calibrated radiocarbon dates do not correspond to the stratigraphic position of the contexts from which they were recovered, or conflict with other dates from the same or contemporary contexts. In other words, they are unlikely to represent the actual calendar dates of the contexts in which they were deposited. I will present my arguments for assigning outlier status to each of these dates.

The subsequent section, “Bayesian Analysis of Calibrated Radiocarbon Dates,” will discuss the Bayesian analysis conducted on some of these dates in more detail. The Bayesian mathematical operations generally require a clustering of radiocarbon dates to establish reliable priors; as a result, only some of the dates (primarily from Unit II and extensions, due to the more extensive vertical stratigraphy from that unit) are suitable for
Bayesian analysis. This section will discuss my reasoning for selecting these dates for Bayesian analysis and the nature of the operations.

The final section, “Architecture Radiocarbon Dates and Calibrations,” will present standard and Bayesian-derived calibrations of radiocarbon dates taken from standing architecture on and around Minaspata. Nine dates from six structures were collected.

**Radiocarbon Calibration Curves**

There are two main calibration curves that can be used to calibrate radiocarbon dates from terrestrial samples, one for the Northern Hemisphere (IntCal 2013) (Reimer et al. 2013) and one for the Southern Hemisphere (ShCal13) (Hogg et al. 2013). These two curves are distinct because the air masses in each hemisphere have different concentrations of $^{14}$C. This difference exists because the greater extent of ocean in the Southern Hemisphere leads to a greater exchange of CO$_2$ between ocean and atmosphere, with temporal perturbations resulting from variable southern ocean wind strength, producing an offset between calibrations in each hemisphere (McCormac et al. 2002; Rodgers et al. 2011). This difference in calibration varies periodically over time, rather than staying constant (McCormac et al. 2002), with amplitudes ranging from -2 to 83 $^{14}$C years for the time interval 200 BCE – 1850 CE (Hogg et al. 2011).

The southern hemisphere calibration curve was first created in 2002 using tree-ring data obtained from New Zealand, Chile, and South Africa (McCormac et al. 2002, 2004). This means that all radiocarbon dates prior to this publication in the Southern
Hemisphere used the Northern Hemisphere curve; many archaeologists have continued to do so, though few archaeologists conducting research in the Andes have provided a justification or explanation of choosing one or the other (though see Finucane et al. 2007; Ogburn 2012). Prior to the creation of the southern hemisphere curve, some archaeologists simply offset the calibrated dates of the Northern Hemisphere calibration curve by 30-40 years (i.e., Bengsston 1998) following the recommendation of Mook (1986; McCormac et al. 2002; Vogel et al. 1993), based on an average estimate of the difference in carbon content between the two hemispheric air masses. The creation of the Southern Hemisphere curve was the first systematic attempt to comprehensively identify how difference between the two calibration curves varied through time using precise dendrochronological dates (McCormac et al. 2002:642).

The division of the hemispheric air masses is not the equator, but the Intertropical Convergence Zone (ITCZ), where tradewinds from north and south converge and mix the air masses. The ITCZ is not fixed, but moves seasonally throughout portions of the tropics as influenced by the position of the sun and the topography of the landmasses it moves over (McCormack et al. 2004:1088). In theory, deciding which calibration curve to use should be a simple matter of identifying whether the archaeological contexts containing the radiocarbon samples lie to the north or to the south of the ITCZ. However, choosing a calibration curve for the Andes region is complicated by the seasonal shift of the ITCZ, which impacts much of the Andes mountain range and the area encompassed by the Inca Empire, including Cuzco. During the austral (Southern Hemisphere) winter, the ITCZ lies primarily to the north, several degrees above the equator. It shifts during
the other months of the year, bending southeast along the eastern side of the Andes and turning east around Bolivia during the austral summer before heading back north (ibid; Finucane et al. 2007:581; Ogburn 2012:223). This brings the Northern Hemisphere atmosphere to the Andes during a good portion of the year, and principally during the months of prime agricultural productivity. Considerable regional variation in the amount of Northern Hemisphere air throughout the yearly cycle exists throughout the Andes, however: the influence of Northern Hemisphere air is much less significant south of Bolivia, and coastal regions are characterized by well-mixed Southern Hemisphere winds from the south and west (Ogburn 2012:224).

For much of the Peruvian and Ecuadorean highlands, the air represents some level of mixture between the Northern and Southern Hemisphere atmospheres, but we currently have no way of gauging the level of mixture in the past. A key concern in choosing which calibration curve to use is the predominant source of air during the agricultural growing season, which affects the uptake of CO₂ (and thus ¹⁴C) in plants (McCormac et al. 2004:1088). The carbonized remains of plants are the most common source of radiocarbon dates from archaeological contexts throughout the world, and thus choosing an appropriate calibration curve should – in theory – be a matter of determining which hemispherical air mass was most influential during the growing season of a given region under investigation. However, this matter is further complicated by several additional factors. Some irrigated crops and wild plants growing along water courses, for example, could have been growing during other parts of the year. In addition, the Inca Empire covered a huge area encompassing different climatic zones and regions subject to
different levels of atmospheric mixing. The Inca moved large quantities of foods, clothing and other materials between different climatic and latitudinal zones, meaning that sometimes we cannot determine definitively if the same calibration curve can even be applied to all excavated remains within a single site (Ogburn 2012:224). One possible option is to consider strategies for mixing the calibration curves, which can be done with software such as OxCal (Bronk Ramsey 2009). However, because these potential effects cannot be currently easily quantified, the best approach may be for archaeologists to publish their dates using the latest versions of both calibration curves (Ogburn 2012). Scholars should then explain their reasoning for choosing one curve or the other for matters of interpretation and refining chronology, depending on the individual sample and context.

After considering these factors, I have elected to provide the calibrated date ranges from the most recent versions of both hemispheric curves (IntCal13 and ShCal13), but will rely on the Northern Hemispheric calibration curve for interpreting the results from Minaspata. In general terms, the Northern Hemisphere curve seems to be more appropriate for the Cuzco region, as it consistently covers most of the highlands during the growing season north of Bolivia. Although some deposited plant remains may have been grown during the austral winter, this probably represents a small proportion and is unlikely to have a large effect on the calibrated dates for most of prehistory.

In addition, evidence for the migration of the austral summer position of the ITCZ on multi-decadal to millennial time scales has been seen in proxy records from around the globe (e.g., Arz et al. 1998; Haug et al. 2001; Lückge et al. 2001; Marret et al. 2001;
Maslin and Burns 2000); Sachs and colleagues (2009) suggest that the ITCZ may have shifted to its southernmost position during the Little Ice Age, from ~ 1420 to 1560/1640 CE, meaning that the Northern Hemisphere atmosphere was likely positioned over Cuzco throughout the entire year during these decades. This phenomenon coincides with the latter part of the time period requiring the highest level of chronological precision for this research, namely the Inca consolidation of the heartland, the timing of the Inca conquest of the Lucre Basin, and the transformations in this area under Inca rule. In earlier periods, the resolution required is not as high, and a potential mean gap of 43±23 years between the two calibration curves (Hogg et al. 2011, 2013:11) will not significantly change the interpretation. Given the probable southward migration of the ITCZ during the Little Ice Age, the Northern Hemisphere calibration curve is even more relevant for the Cuzco region during this later period.

Finally, most researchers in the Cuzco region have generally used the Northern Hemisphere calibration curve for calibrated radiocarbon dates, and shifting to the Southern Hemisphere curve without good reason may create unnecessary confusion in regional interpretation.

**Radiocarbon Dates and Calibrations**

This section will present the date ranges and individual plots from standard calibration of all radiocarbon dates taken from excavation. Table A.2 includes basic contextual and identifying information for each date, while Table A.3 presents the date ranges for each standard confidence interval for both hemispheric calibration curves, and
when appropriate, the modeled date ranges after subjected to Bayesian analysis (see below). I have elected to present individual plots for each date (calibrated with both the Northern Hemisphere [IntCal13] and Southern Hemisphere [ShCal13] curves) in lieu of a standard multiplot of all dates from each excavation unit for two reasons: first, it allows direct comparison of the different calibration curves for each date more easily; and second, the individual plots not only provide a clearer graphic representation of the errors associated with each date range, but also more easily display the percentage probabilities for each date range within 68.2%, 95.4%, and 99.7% confidence intervals. The plots presented in this section are calibrated radiocarbon date ranges using standard calibration only; the Bayesian analysis of some of these dates is discussed further below. The associated contexts of these dates are discussed in more detail in Chapter 4 (“Excavation Results”). All radiocarbon calibrations, Bayesian operations, and plots were generated using the OxCal software program (version 4.2.4) developed by Christopher Bronk Ramsey (1998, 2009).

**Outlier Analysis**

Four of these radiocarbon samples likely represent outlier dates, meaning that the calibrated radiocarbon dates do not correspond to the stratigraphic position of the contexts from which they were recovered, or conflict with other dates from the same context or contemporary contexts. In other words, they are unlikely to represent the actual calendar dates of the contexts in which they were deposited.
<table>
<thead>
<tr>
<th>Lab ID</th>
<th>Sample ID</th>
<th>Context Number</th>
<th>Unit</th>
<th>Radiocarbon Age BP</th>
<th>Approximate Chronology</th>
<th>Radiocarbon Chronology</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-AMS 006696</td>
<td>MC 898</td>
<td>C430</td>
<td>II-A</td>
<td>916 ± 24</td>
<td>Early MH/Late EIP</td>
<td>Early LIP</td>
<td>Charcoal</td>
</tr>
<tr>
<td>D-AMS 006692</td>
<td>MC 696</td>
<td>C408</td>
<td>II-A</td>
<td>1077 ± 24</td>
<td>Early LIP</td>
<td>Late MH</td>
<td>Charcoal</td>
</tr>
<tr>
<td>D-AMS 010050</td>
<td>MC 497</td>
<td>C287</td>
<td>II-A/II-B</td>
<td>659 ± 20</td>
<td>Late LIP</td>
<td>Mid LIP</td>
<td>Charcoal</td>
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<tr>
<td>D-AMS 010046</td>
<td>MC 517</td>
<td>C333</td>
<td>IV-A</td>
<td>845 ± 24</td>
<td>Late LIP</td>
<td>Early/Mid LIP</td>
<td>Charcoal</td>
</tr>
</tbody>
</table>

Table A.1: Samples with calibrated outlier dates.

**MC 898**: This sample was taken from a cultural level (Context 430) underneath a probable floor surface dating to the Middle Horizon (Context 433; radiocarbon samples MC 886 and MC 887 from C433 securely date this context to the Middle Horizon). Sample MC 1126 was recovered from the cultural level immediately underlying C430, which contained significant amounts of Qotakalli style ceramics and other material diagnostic to the Early Intermediate Period; MC 1126 also returned a calibrated date of 431-607 CE (95.4% CI), placing it towards the later end of this period. These dates from immediate upper and lower levels bracketing C430, along with the cultural material found in C450, C430, and C433, suggest that this context should date to the later EIP or early MH. However, the radiocarbon date from MC 898 is 916 BP ± 24, which returns a calibrated calendar date placing it in the early Late Intermediate Period (1032-1182 CE, 95.4% CI) (Figure A.1).
Since C433 is a floor context and this section of the stratigraphy appeared to be undisturbed, it seems unlikely that the sample is intrusive, particularly since it is several centuries later than it should be. A review of the excavation notes from the day the sample was taken indicates that several contexts from different parts of the Unit II extensions were under excavation that day, some of which date to the Late Intermediate Period. The most likely explanation for this late date is that the sample was mislabeled in the field, and actually comes from a later context in a different part of the unit extensions.

MC 696: The outlier status of MC 696 is less definite, although Bayesian analysis suggests it is likely an outlier. The context associated with MC 686 (Context 408) is stratigraphically contemporary with four other contexts from which radiocarbon samples were recovered; all contexts contained ample amounts of Lucre-style pottery and appear to come from the early Late Intermediate Period. However, MC 696 returns a calibrated date roughly a century earlier than the other samples, which cluster tightly around 990-1150 CE (95.4% CI) (Figure A.2).
Lighter areas indicate the standard calibrated date ranges, prior to Bayesian analysis; darker areas represent the plotted date ranges after Bayesian analysis. In this figure, MC 696 is treated as an outlier, meaning it is not included in the Bayesian analysis model.

These five dates were all subjected to a Bayesian Phase analysis, meaning they were treated as contemporary dates by the Phase model. Although MC 696 returned an Agreement Index of 68.9 (values larger than 60 are generally considered consistent with the model), this was far below the Agreement Indices of the other four dates, which ranged from 128.2 to 141.6. Treating MC 696 as an outlier in the model, however, brought the Agreement Indices of the other four dates up to 142.0 to 163.8, and the Bayesian analysis indicated there was a 6.3% probability that this date belonged in this grouping (i.e., that it was not an outlier date) (see Bronk Ramsey 2009b for detailed description of Bayesian outlier analysis in OxCal software). The early date from this
sample probably is due to the “old wood” problem in radiocarbon dating; since AMS radiocarbon dating dates the amount of $^{14}$C in the sample at the time it stopped absorbing new carbon (i.e., when the organism constituting the carbon sample died or was harvested) rather than the time it was deposited, some carbon samples – particularly those originating from wood – may have been used for substantial amounts of time before being deposited in the archaeological record. MC 696 probably represents this phenomenon.

**MC 497:** This sample, along with sample MC 411, both come from Feature R-101. This feature consisted of a roughly 2x2 meter semicircular pit, roughly 40-50 cm deep, lined with large stones on the bottom, sides, and top. The interior of the pit was densely packed with large fragments of mainly Lucre-style pottery, ash and carbon, and small amounts of animal bone and lithic fragments (see Chapter 5). Due to the nature of the construction – particularly the fact that it was covered by a layer of large stones – R-101 was interpreted as a single-deposition event.

**Figure A.3.** MC 497 and MC 411 calibrated plots, both recovered from R-101.
However, MC 497 returned a substantially earlier date than MC 411 at all confidence intervals (Figure A.3). Since the dates do not overlap, this lack of agreement between the dates suggests that one of the dates is an outlier. It is unlikely that a sample from later contexts intruded into R-101, since it was covered by a layer of tightly packed large stones. In addition, much of the diagnostic ceramic material inside R-101 appeared to be late-phase Lucre style fragments, and the feature itself was located near the surface and was surrounded by mixed LIP and Inca diagnostic material. Given these data, and the potential of the “old wood” problem (see above) present in radiocarbon dating, I believe MC 497 likely represents vegetation harvested or cut down a century or two before the creation of R-101, but was burned and deposited as part of this event.

**MC 517:** Similar to the relationship between MC 411 and MC 497, MC 517 was recovered from the same archaeological context (C333) as MC 514, but returned a substantially earlier date range than MC 514, with no overlap between the two calibrations at the 99.7% confidence interval (CI) (Figure A.4). Context 333 from Unit IV-A was a small area located inside a wall foundation probably constructed in the last century or so of the Late Intermediate Period. Several very large fragments of Lucre style pottery were recovered from C333, which were subsequently covered *in situ* by large stones, likely originating from a fallen wall located outside of the unit (see Chapter 5).
The reasoning behind designating MC 517 as an outlier date is similar to that of MC 497 above: because the context was covered by wall fall and surrounded by LIP and Inca Period contexts, the later sample is unlikely to be intrusive. Therefore, MC 517 likely also represents vegetation that was harvested at an earlier date, but was only burned and deposited when C333 was created in the archaeological record.

Bayesian Analysis of Calibrated Radiocarbon Dates

Various uncertainties are inherent to radiocarbon dating, particularly in the measurements of the material used to determine the atmospheric concentration of $^{14}$C (usually tree rings), and in the measurements of the samples themselves. This limited precision results in a range of calendar dates with given probabilities associated with them, rather than a single precise date. In some cases, depending on the point(s) in the calibration curve which intersect with the measured radiocarbon age of the sample, these date ranges can be quite large, and thus of limited utility in archaeological interpretation. However, special features in radiocarbon calibration software – in this case, OxCal version 4.2.4 – can utilize Bayesian statistical analysis to narrow the date ranges (among other probabilistic operations) of sets of calibrated radiocarbon dates.

Figure A.4. MC 517 and MC 514 calibrated radiocarbon plots, both from C333.
While the mathematical formulae used to perform these probabilistic analyses are far beyond the scope of this explanation, the idea behind Bayesian analysis is simple: it provides a rational way to update prior beliefs using new data. In terms of the archaeological use of radiocarbon dates, the prior beliefs refer to the statistical probability that a radiocarbon age calibrates to a given calendar date, whereas the “new data” can consist of the stratigraphic ordering of associated contexts, historical data, or other information known to the archaeologist but not considered in the standard radiocarbon calibration.

A simple example hinges on the Law of Superposition: if an object (in this case, a context with an associated radiocarbon sample) is lower than another, and the stratigraphy is undisturbed, it must be older. If the calibrated date ranges from two radiocarbon samples overlap, but are related stratigraphically, we can infer that the overlapping ranges of one or both dates are less likely to be the “true” calendar age of the sample. Conversely, if two samples from stratigraphically contemporary contexts return date ranges that partially overlap, this overlapping section is more likely to include the “true” calendar age than the extremes of the date ranges for each individual sample. While this type of analysis is frequently done on an informal basis, Bayesian analysis provides a rigorous statistical methodology to provide a more precise range of dates for a given sample. In other words, it provides a statistical probability that a given hypothesis (in the case of the first example, that one date is older than the other by a certain amount) should or should not be rejected on the basis of the stratigraphic data, which would not be considered using normal calibration methods.
Several different tools using Bayesian statistical analysis are available through the OxCal software, but this explanation will focus on four methods which are applicable to radiocarbon dates processed as part of this research project.

A) **Sequence** – a “Sequence” model creates a model to analyze a series of dates obtained from samples which were excavated in stratigraphic order, to determine the degree to which the dates actually form a sequence, and potentially reduces the uncertainty value of each date.

B) **Phase** – A “Phase” model is used when one has a set of dates for which no internal order can be assumed. This would be appropriate for a set of unordered dates from a single stratum, or dates from a series of discrete contexts which are stratigraphically contemporaneous. In this case, the stratigraphy must be the basis for conducting such an analysis; similar date ranges from a set of samples (post-calibration) should not be used to inform a belief that the stratigraphic associations of the samples are contemporary, as this would constitute circular reasoning and could result in faulty interpretation.

C) **Combine** – A “Combine” analysis is somewhat similar to a Phase model, but in this case, the calibrated radiocarbon dates come from the same sample, or less securely, from two samples from the same (secure) context. It assumes that the dates were produced and deposited at the exact same time, and they can be combined as one date to reduce the uncertainty value of the date range. As a result, the Combine operation is most appropriate for dates recovered from single-deposition events, individual buildings, or other similar contexts. The “old wood”
problem (see above, “Outlier Analysis”) must be kept in mind when considering this operation; if two dates from the same context do not overlap, statistically combining the two dates is probably not appropriate.

D) *Date Constraint* – this type of analysis involves placing a *terminus ante quem* or *terminus post quem* calendar date on the date range of a sample. In simpler terms, if we know that an event in the archaeological record must have occurred before or after a firm calendar date, this type of constraint can be used to eliminate the probability that an archaeological context occurred outside of that calendar date. For the Pre-Columbian Andes, which lacks a firm historical record (Cabello Valboa’s chronology notwithstanding), this type of parameter can only be used with confidence for the arrival of the Spanish in 1532 CE. For example, if we are reasonably certain that an archaeological context was deposited before the arrival of the Spanish, but the standard calibrated date range extends into the latter 16th century, a “date parameter” can be inserted into the model, providing more a more precise date range prior to 1532. This can be particularly useful for late Inca contexts. However, it is worth stressing that this type of Bayesian operation should not be justified on the basis of diagnostic ceramics or other material culture: artifacts frequently move after deposition due to geological processes and bioturbation, for example, and other anthropogenic and natural processes can lead to complex stratigraphy that may be difficult to interpret.
A total of six dates from Unit II and extensions, representing two different groups, were tightly clustered and stratigraphically related in such a way where Bayesian statistical analysis served to reduce the probable date ranges. Additionally, nine samples taken from six standing structures in and around Minaspata were processed and analyzed using different Bayesian operations; however, these will be discussed in their own section further below (“Architecture Radiocarbon Dates and Calibrations”).

**Early Intermediate Period Grouping**

The first grouping consisted of the samples MC 12 and MC 1126 (Table A.4; Figure A.23). Although both calibrated radiocarbon dates overlapped considerably and placed the contexts of these samples (C27 and C450, respectively) in the middle or later phase of the Early Intermediate Period, MC 26 was located approximately 30 cm lower in the stratigraphy than MC 1126. As a result, I inferred that MC 26 was likely to be earlier than MC 1126. A general Sequence model (see above) was conducted on these two dates using the OxCal software (see above), which assumes that one is earlier than the other but the absolute difference between the dates is unknown (Bronk Ramsey 2009a: 343-345). The next reliable date in the sequence was also added to the model as an upper bracket date, but likely had little effect on the model, since the date range did not overlap with that of MC 26 and MC 1126 (Table A.4, Figure A.23).

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A multi-phase sequence model was also created using the full sequence of all dates from Unit II and extensions, but had little effect on the original calibrated dates apart from the six presented here, and will not be discussed.
The code used to generate the Sequence model in the OxCal software is as follows:

```plaintext
Plot()
{
  Sequence ("UE II EIP")
  {
    Boundary ("S");
    R_Date("D-AMS 006691_MC12", 1523, 30);
    R_Date("D-AMS 006699_MC1126", 1515, 23);
    R_Date("D-AMS 006697_MC886", 1293, 21);
    Boundary ("E");
  }
}
```

While the Sequence model had relatively little effect on MC 12, from the context located lower in the stratigraphic sequence, it did shift the earliest range for MC 1126 by over a century at the 95.4% confidence interval – resulting in a significantly reduced date range. However, two caveats must be kept in mind. First, the model does not prove that MC 1126 is later than MC 12; it merely indicates that, statistically speaking, the hypothesis that this is the case cannot be rejected by the model. Indeed, the individual plots and calibrated date ranges suggest a high likelihood that both samples were created (and, presumably, deposited) during the last century of the Early Intermediate Period, even after the Bayesian analysis.

Second, the applicability of a Sequence model depends on the reliability of the stratigraphic associations between the two samples. Although clearly separated by approximately 30 cm of sediment and cultural deposits, the deposition rate of this material is unknown, and the levels separating these samples showed no clear boundaries and contained similar diagnostic material culture. While MC 1126 was almost certainly deposited later than MC 12, it is entirely possible that all the material and sediment in
these levels was deposited in very rapidly, and these contexts could be separated by only a few years or decades – most likely during the 6th century CE (though possibly as early as 430 CE). If this were the case, a Sequence model would probably not be the most appropriate method for analyzing these dates.

**Late Intermediate Period Grouping**

The second grouping of calibrated radiocarbon dates subjected to Bayesian statistical analysis consists of four dates recovered from contemporary contexts dating to the early Late Intermediate Period, based on stratigraphic position and diagnostic ceramics. All contexts were located in Units II-A and II-B. These dates were analyzed using a Phase model (see above), which assumes that all dates within the model are chronologically contemporary (Bronk Ramsey 2009a). The resulting date ranges are significantly restricted for all four dates at the 95.4% confidence interval, clustering tightly around 1005-1045 CE (Table A.5; Figure A.2; Figure A.25). As a result, the probability that all of the contexts from which these dates were obtained were deposited in the first half of the 11th century CE is very high – over 95%. A corollary to this is that all stratigraphically contemporary contexts also probably date to the same period (Table A.5, Figure A.24).

The code used to generate this Phase model in the OxCal software is as follows (MC 696 is included in this model, but is flagged as an outlier date):

---

160 A fifth date, MC 696, was originally included in this grouping, but the Bayesian model suggested it was an outlier date (see above, “Outlier Analysis”; Figure A.20).
Architecture Radiocarbon Dates and Calibrations

Samples intended for radiocarbon dating were taken from six standing structures in and around Minaspata. Three of these structures were Inca-style buildings (two from the Salteryoq cluster in the southern sector of Minaspata, and one from Kañarakay), and three were open-sepulcher chullpa burial towers, which also appear to date to the period of Inca occupation. All samples consisted of several strands of ichu grass embedded in the mortar of each structure; the mortar consisted of hardened clay with generous amounts of ichu grass mixed in to provide structure to the mortar and protect the integrity of the building over time. The grass was generally quite well-preserved by the mortar. Samples were collected from an interior wall of each structure, using tweezers cleaned after each sample with rubbing alcohol, to minimize the likelihood of environmental
contamination. The exception was Sample KA-2, which was collected from beneath the superficial layer of clay plaster from an interior niche.

The samples taken from Inca-style structures (SA 3-2, SA 6-1, and KA-2) were sent to Direct-AMS without further processing. However, the samples taken from the chullpas (CH SA-7, CH A3-4, and CH CA-A) were each split into two parts, (A) and (B); the samples were processed separately and the resulting radiocarbon dates were combined statistically using the OxCal software (Table A.6, A.7: Figures A.25-A.34). This was done to narrow the probability ranges of each structure\(^{161}\). The code used to conduct this operation using the OxCal software is shown below for CH A3-4, as an example:

```
Plot()
{
  R_Combine("CH A3-4")
  {
    R_Date("CH A3-4 (A)", 367, 20);  
    R_Date("CH A3-4 (B)", 375, 24);
  };
};
```

In addition to combining (A) and (B) dates from the chullpa structures, two kinds of Bayesian analytical methods were applied to several of the dates. A terminus ante quem calendar date constraint of 1532 CE was applied to SA 3-2, SA 6-1, KA-2, CH SA-7, and CH A3-4. This was justified by the assumption that the construction of indigenous-style structures at Minaspata probably ceased after the execution of Huascar, following

\(^{161}\) SA 3-2, SA 6-1, and KA-2 were not split into two separate samples due to limited finances. The AMS dating of the chullpa samples was generously paid for by Dr. Gordon McEwan, as part of a joint interest in the dating of chullpa structures at Choquepukio and Minaspata.
the usurpation of the Inca throne and Huascar’s defeat to his half-brother Atahualpa shortly before the arrival of the Spanish to Cuzco in 1532 (Chapter 3).\textsuperscript{162} Due to the flatter shape of the IntCal13 calibration curve during this period, many of the dates from these buildings spanned parts of the 15\textsuperscript{th}, 16\textsuperscript{th} and even 17\textsuperscript{th} centuries. Applying a TAQ date constraint to these dates forced the OxCal program to assume that the radiocarbon sample must have originated before 1532, and shifted the date range probabilities accordingly. The resulting date ranges at each probability confidence interval were significantly narrowed as a result (Table A.6, A.7: Figures A.25-A.34).\textsuperscript{163} The code used to conduct the Date Constraint operations (for all five dates) is as follows:

```cpp
Plot()
{
    R_Date("SA 3-2", 366, 21) & Date(U(1300,1532));
    R_Date("SA 6-1", 430, 25) & Date(U(1300,1532));
    R_Date("KA-2", 329, 23) & Date(U(1300,1532));
    R_Date("CH SA-7", 408, 17) & Date(U(1300,1532));
    R_Date("CH A3-4", 370, 16) & Date(U(1300,1532));
    R_Date("CH CA-A", 291, 18);
};
```

Second, a Phase model operation was applied to the radiocarbon dates from samples originating in the Salteryoq cluster of structures in the Southern Sector of Minaspatá, under the assumption that all Inca-style buildings in this cluster were built within at least a few decades of each other. The three samples were SA 3-2, SA 6-1, and

\textsuperscript{162} This technique was not applied to CH CA-A, since the standard calibration date suggested only a very small probability it was constructed prior to 1532. The chullpa from which Sample CH CA-A came differed from the other chullpas on Minaspatá in several respects, and may have been built in the early part of the Colonial Period.

\textsuperscript{163} For samples which were collected from chullpa structures, the Date Constraint operation was applied to the combined dates only.
CH SA-7 (Table A.8; Figures A.35-A.38). This operation narrowed the date range considerably. To obtain even more precision, a TAQ date constraint at 1532 CE was added for each radiocarbon date in the Phase model, for reasons already described above. The resulting date ranges indicate that all three buildings were probably constructed within a 20- to 50-year span in the middle part of the 15th century CE, although structure SA 3 (from which sample SA 3-2 was taken) may have been built a few decades later than the other structures.

The code used for the first Phase model operation (without the TAQ constraint) is as follows:

```plaintext
Sequence()
{
    Boundary("S");
    Phase("Salteryoq")
    {
        R_Date("SA 3-2", 366, 21);
        R_Date("SA 6-1", 430, 25);
        R_Date("CH SA-7", 408, 17);
    }
    Boundary("E");
}
```

The same Phase model with a TAQ date constraint of 1532 CE for each date was performed using the following code:

```plaintext
Sequence()
{
    Boundary("S");
    Phase("Salteryoq")
    {
        R_Date("SA 3-2", 366, 21) & Date(U(1300,1532));
```
In the latter operation, the \texttt{Date(U(1300,1532))} modifier creates both a \textit{terminus post quem} and a \textit{terminus ante quem} constraint. This is due to the programming structure of the software – in other words, date constraint operations must be phrased as a range between two calendar dates to be read properly by the software. 1300 CE was chosen as a constraint for TPQ date, but it was more or less arbitrarily chosen – the only requirements were that the TPQ date be consistent throughout the entire operation, and that it be earlier than the earliest probability boundary of all calibrated radiocarbon dates using the Date Constraint operation, so that it did not affect the actual confidence intervals. Since none of the building date ranges extended before 1416 CE at the 99.7\% CI, a TPQ date of 1300 CE allowed plenty of room to spare.
## Radiocarbon dates and calibrations

<table>
<thead>
<tr>
<th>Lab ID</th>
<th>Sample ID</th>
<th>Context Number</th>
<th>Unit</th>
<th>Level</th>
<th>Notes on Context</th>
<th>Stratigraphic Chronology</th>
<th>Material</th>
<th>Age BP</th>
<th>1σ Error</th>
</tr>
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<tbody>
<tr>
<td>D-AMS 006691</td>
<td>MC 12</td>
<td>C27</td>
<td>II</td>
<td>N-K</td>
<td>Ash lens full of carbonaceous material (Feature R-07)</td>
<td>Late EIP</td>
<td>Charcoal</td>
<td>1523</td>
<td>30</td>
</tr>
<tr>
<td>D-AMS 006699</td>
<td>MC 1126</td>
<td>C450</td>
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<td>MC 898</td>
<td>C430</td>
<td>II-A</td>
<td>N-H</td>
<td>Cultural level under/including C433</td>
<td>Early MH/ Late EIP</td>
<td>Charcoal</td>
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<td>24</td>
</tr>
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<td>MC 886*</td>
<td>C433</td>
<td>II-B</td>
<td>N-H</td>
<td>Probable floor surface between EIP and LIP levels (Feature R-183)</td>
<td>MH</td>
<td>Charcoal</td>
<td>1293</td>
<td>21</td>
</tr>
<tr>
<td>D-AMS 006698</td>
<td>MC 887*</td>
<td>C433</td>
<td>II-B</td>
<td>N-H</td>
<td>Probable floor surface between EIP and LIP levels (Feature R-183)</td>
<td>MH</td>
<td>Charcoal</td>
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<td>21</td>
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<tr>
<td>D-AMS 006694</td>
<td>MC 803</td>
<td>C418</td>
<td>II-A/</td>
<td>N-G</td>
<td>Small section of burnt floor/surface (Feature R-115)</td>
<td>Early LIP</td>
<td>Humin</td>
<td>999</td>
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<tr>
<td>D-AMS 006693</td>
<td>MC 687</td>
<td>C415</td>
<td>II-B</td>
<td>N-G</td>
<td>Arbitrary level of 5-10 cm</td>
<td>Early LIP</td>
<td>Charcoal</td>
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<td>24</td>
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<td>D-AMS 010051</td>
<td>MC 840</td>
<td>C411</td>
<td>II-A</td>
<td>N-G</td>
<td>Soil and artifacts underlying A-110, a rough one-layer fieldstone wall foundation</td>
<td>Early LIP</td>
<td>Charcoal</td>
<td>990</td>
<td>24</td>
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<tr>
<td>D-AMS 006692</td>
<td>MC 696</td>
<td>C408</td>
<td>II-A</td>
<td>N-F</td>
<td>Small area of stones and pebbles mixed with small artifacts (Feature R-113)</td>
<td>Early LIP</td>
<td>Charcoal</td>
<td>1077</td>
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<td>D-AMS 010048</td>
<td>MC 810</td>
<td>C417</td>
<td>II-A</td>
<td>N-F</td>
<td>Globular feature in N profile, formed by stones and ceramic vessel (Feature R-114)</td>
<td>Early LIP</td>
<td>Charcoal</td>
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<td>C296</td>
<td>II-A</td>
<td>N-E</td>
<td>Soft, loose soil associated with A-106 (Feature R-111)</td>
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<td>Charcoal</td>
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<td>D-AMS 010050</td>
<td>MC 497**</td>
<td>C287</td>
<td>II-A/</td>
<td>N-C</td>
<td>Stone-lined and -covered deposit of densely packed ceramics and ash. (Feature R-101, bottom level)</td>
<td>Late LIP</td>
<td>Charcoal</td>
<td>659</td>
<td>20</td>
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</tbody>
</table>

Table A.2: List of samples from excavation submitted for radiocarbon dating.

Dates are ordered by stratigraphic position, from lowest to highest by excavation unit. Asterisks designate samples which are from the same context.
<table>
<thead>
<tr>
<th>Lab ID</th>
<th>Sample ID</th>
<th>Context Number</th>
<th>Unit</th>
<th>Level</th>
<th>Notes on Context</th>
<th>Stratigraphic Chronology</th>
<th>Material</th>
<th>Age BP</th>
<th>1σ Error</th>
</tr>
</thead>
<tbody>
<tr>
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<td>MC 411**</td>
<td>C264</td>
<td>II-A/II-B</td>
<td>N-B/ N-C</td>
<td>Stone-lined and -covered deposit, densely packed with ceramics and ash (Feature R-101, top level)</td>
<td>Late LIP</td>
<td>Charcoal</td>
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<tr>
<td>D-AMS 010044</td>
<td>MC 911</td>
<td>C358</td>
<td>IV-B</td>
<td>N-K</td>
<td>Small stone floor under LIP/LH fill; sealed EIP levels below floor (Feature R-144)</td>
<td>Mid EIP</td>
<td>Charcoal</td>
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<td>26</td>
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<td>D-AMS 010046</td>
<td>MC 517***</td>
<td>C333</td>
<td>IV-A</td>
<td>N-D</td>
<td>Small area inside of LIP wall, covered by wall fall, dense layer of Lucre-style ceramics (Feature R-129)</td>
<td>Late LIP</td>
<td>Charcoal</td>
<td>845</td>
<td>24</td>
</tr>
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<td>D-AMS 010052</td>
<td>MC 514***</td>
<td>C333</td>
<td>IV-A</td>
<td>N-D</td>
<td>Small area inside of LIP wall, covered by wall fall, dense layer of Lucre-style ceramics (Feature R-129)</td>
<td>Late LIP</td>
<td>Charcoal</td>
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<td>MC 533</td>
<td>C336</td>
<td>IV-A</td>
<td>N-D</td>
<td>Small lens or shallow pit of soft, ashy soil. Demarcated by A-121 and some small stones (Feature R-130)</td>
<td>Inca/Late LIP</td>
<td>Charcoal</td>
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<td>MC 188</td>
<td>C71</td>
<td>I-B</td>
<td>N-I</td>
<td>Arbitrary level full of Marcavalle diagnostic ceramics</td>
<td>Middle Formative</td>
<td>Charcoal</td>
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Table A.2: List of samples from excavation submitted for radiocarbon dating (continued).
<table>
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<th>Sample ID</th>
<th>Age BP</th>
<th>IntCal13 CE 1σ (68.2%) CI</th>
<th>IntCal13 CE 2σ (95.4%) CI</th>
<th>IntCal13 CE 3σ (99.7%) CI</th>
<th>ShCal13 CE 1σ (68.2%) CI</th>
<th>ShCal13 CE 2σ (95.4%) CI</th>
<th>ShCal13 CE 3σ (99.7%) CI</th>
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</thead>
<tbody>
<tr>
<td>MC 12</td>
<td>1523 ± 30</td>
<td>435-448 (7.5%) 472-487 (9.5%) 535-591 (51.3%)</td>
<td>428-498 (33.0%) 505-605 (62.4%)</td>
<td>421-636 (99.7%)</td>
<td>573-633 (68.2%)</td>
<td>536-643 (95.4%)</td>
<td>443-453 (0.1%) 466-653 (99.6%)</td>
</tr>
<tr>
<td>MC 12</td>
<td>470-488 (10.0%) 530-580 (58.2%)</td>
<td>431-496 (26.8%) 506-592 (68.6%)</td>
<td>421-604 (99.7%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MC 1126</td>
<td>1515 ± 23</td>
<td>539-591 (68.2%)</td>
<td>431-490 (17.3%) 531-607 (78.1%)</td>
<td>426-630 (99.7%)</td>
<td>584-631 (95.4%)</td>
<td>546-642 (99.7%)</td>
<td>531-649 (99.7%)</td>
</tr>
<tr>
<td>MC 1126</td>
<td>551-594 (68.2%)</td>
<td>533-617 (95.4%)</td>
<td>440-495 (2.4%) 505-640 (97.3%)</td>
<td></td>
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<tr>
<td>MC 898</td>
<td>916 ± 24</td>
<td>1045-1095 (41.4%) 1120-1142 (17.1%) 1147-1159 (9.7%)</td>
<td>1032-1169 (94.7%) 1178-1182 (0.7%)</td>
<td>1026-1210 (99.7%)</td>
<td>1160-1205 (68.2%)</td>
<td>1051-1080 (6.7%) 1145-1223 (88.7%)</td>
<td>1045-1231 (99.4%) 1250-1262 (0.3%)</td>
</tr>
<tr>
<td>MC 886*</td>
<td>1293 ± 21</td>
<td>675-710 (43.0%) 745-764 (25.2%)</td>
<td>666-726 (61.2%) 738-769 (34.2%)</td>
<td>660-762 (99.7%)</td>
<td>682-743 (41.3%) 759-863 (54.1%)</td>
<td>680-880 (99.7%)</td>
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</tr>
<tr>
<td>MC 887*</td>
<td>1209 ± 21</td>
<td>773-778 (5.0%) 790-831 (36.2%) 837-868 (27.0%)</td>
<td>726-738 (3.9%) 767-886 (91.5%)</td>
<td>690-749 (7.1%) 761-895 (92.5%)</td>
<td>797-802 (2.2%) 858-899 (36.6%)</td>
<td>928-963 (29.4%)</td>
<td>774-817 (15.0%) 837-905 (45.6%) 915-969 (34.8%)</td>
</tr>
<tr>
<td>MC 803</td>
<td>999 ± 21</td>
<td>998-1005 (6.5%) 1011-1037 (61.7%)</td>
<td>989-1045 (85.4%) 1095-1120 (8.9%)</td>
<td>982-1053 (86.2%) 1080-1154 (13.5%)</td>
<td>1034-1048 (13.0%) 1084-1140 (55.2%)</td>
<td>1027-1150 (95.4%)</td>
<td>1020-1163 (99.7%)</td>
</tr>
<tr>
<td>MC 803</td>
<td>1019-1030 (68.2%)</td>
<td>1005-1042 (95.4%)</td>
<td>988-1050 (98.5%) 1093-1122 (1.2%)</td>
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Table A.3: Calibrated radiocarbon dates of samples recovered from excavation.

Calibrated date ranges at 1σ (68.2%), 2σ (95.4%), and 3σ (99.7%) confidence intervals for each radiocarbon date are presented below, using both the Northern Hemisphere (IntCal13) and Southern Hemisphere (ShCal13) atmosphere calibration curves. Dates in red text indicate outlier dates (see below, “Outlier Analysis,” for discussion). Shaded rows represent date ranges obtained using Bayesian analysis (see below, “Bayesian Analysis,” for discussion). Asterisks indicate samples recovered from the same contexts.
<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Age BP</th>
<th>IntCal13 CE 1σ (68.2%) CI</th>
<th>IntCal13 CE 2σ (95.4%) CI</th>
<th>IntCal13 CE 3σ (99.7%) CI</th>
<th>ShCal13 CE 1σ (68.2%) CI</th>
<th>ShCal13 CE 2σ (95.4%) CI</th>
<th>ShCal13 CE 3σ (99.7%) CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>MC 687</td>
<td>994 ± 24</td>
<td>997-1005 (5.2%) 1011-1042 (54.8%) 1107-1118 (8.2%)</td>
<td>989-1050 (71.6%) 1085-1125 (19.1%) 1136-1150 (4.7%)</td>
<td>982-1155 (99.7%)</td>
<td>1035-1051 (12.8%) 1081-1145 (55.4%)</td>
<td>1030-1150 (95.4%)</td>
<td>1020-1179 (99.7%)</td>
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<tr>
<td>MC 687</td>
<td></td>
<td>1019-1031 (68.2%)</td>
<td>1002-1044 (95.4%)</td>
<td>987-1054 (98.1%) 1084-1125 (1.6%)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>MC 840</td>
<td>990 ± 24</td>
<td>1015-1044 (53.5%) 1101-1119 (14.7%)</td>
<td>991-1050 (65.4%) 1083-1126 (23.9%) 1136-1151 (6.1%)</td>
<td>985-1155 (99.7%)</td>
<td>1041-1051 (8.8%) 1080-1146 (59.4%)</td>
<td>1030-1153 (95.4%)</td>
<td>1021-1181 (99.7%)</td>
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<tr>
<td>MC 840</td>
<td></td>
<td>1020-1031 (68.2%)</td>
<td>1005-1045 (95.4%)</td>
<td>987-1055 (97.9%) 1084-1127 (1.8%)</td>
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<tr>
<td>MC 696</td>
<td>1077 ± 24</td>
<td>902-920 (16.2%) 964-1013 (52.0%)</td>
<td>896-927 (23.4%) 941-1018 (72.0%)</td>
<td>891-1022 (99.7%)</td>
<td>995-1021 (68.2%)</td>
<td>973-1040 (95.4%)</td>
<td>897-930 (1.4%) 964-1049 (96.4%) 1082-1140 (1.9%)</td>
</tr>
<tr>
<td>MC 810</td>
<td>988 ± 25</td>
<td>1015-1045 (46.6%) 1095-1120 (18.7%) 1142-1147 (2.9%)</td>
<td>992-1051 (60.8%) 1082-1128 (27.3%) 1135-1152 (7.3%)</td>
<td>986-1155 (99.7%)</td>
<td>1043-1052 (8.0%) 1079-1146 (60.2%)</td>
<td>1029-1155 (95.4%)</td>
<td>1020-1184 (99.7%)</td>
</tr>
<tr>
<td>MC 810</td>
<td></td>
<td>1019-1031 (68.2%)</td>
<td>1005-1047 (95.4%)</td>
<td>988-1056 (97.8%) 1081-1125 (1.9%)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>MC 810</td>
<td>988 ± 25</td>
<td>1015-1045 (46.6%) 1095-1120 (18.7%) 1142-1147 (2.9%)</td>
<td>992-1051 (60.8%) 1082-1128 (27.3%) 1135-1152 (7.3%)</td>
<td>986-1155 (99.7%)</td>
<td>1043-1052 (8.0%) 1079-1146 (60.2%)</td>
<td>1029-1155 (95.4%)</td>
<td>1020-1184 (99.7%)</td>
</tr>
<tr>
<td>MC 810</td>
<td></td>
<td>1019-1031 (68.2%)</td>
<td>1005-1047 (95.4%)</td>
<td>988-1056 (97.8%) 1081-1125 (1.9%)</td>
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Table A.3: Calibrated radiocarbon dates of samples recovered from excavation (continued).
<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Age BP</th>
<th>IntCal13 CE 1σ (68.2%) CI</th>
<th>IntCal13 CE 2σ (95.4%) CI</th>
<th>IntCal13 CE 3σ (99.7%) CI</th>
<th>ShCal13 CE 1σ (68.2%) CI</th>
<th>ShCal13 CE 2σ (95.4%) CI</th>
<th>ShCal13 CE 3σ (99.7%) CI</th>
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</thead>
<tbody>
<tr>
<td>MC 830</td>
<td>811 ± 24</td>
<td>1217-1257 (68.2%)</td>
<td>1183-1269 (95.4%)</td>
<td>1162-1274 (99.7%)</td>
<td>1230-1250 (38.1%)</td>
<td>1261-1276 (30.1%)</td>
<td>1221-1283 (95.4%)</td>
</tr>
<tr>
<td>MC 497**</td>
<td>659 ± 20</td>
<td>1287-1304 (32.5%)</td>
<td>1281-1316 (46.6%)</td>
<td>1276-1326 (48.7%)</td>
<td>1317-1355 (54.7%)</td>
<td>1383-1392 (13.5%)</td>
<td>1301-1365 (72.5%)</td>
</tr>
<tr>
<td>MC 411**</td>
<td>460 ± 28</td>
<td>1426-1449 (68.2%)</td>
<td>1414-1463 (95.4%)</td>
<td>1403-1492 (99.5%)</td>
<td>1442-1480 (68.2%)</td>
<td>1431-1502 (95.4%)</td>
<td>1415-1513 (91.5%)</td>
</tr>
<tr>
<td>MC 911</td>
<td>1560 ± 26</td>
<td>430-492 (56.4%)</td>
<td>513-516 (2.3%)</td>
<td>530-541 (9.5%)</td>
<td>530-590 (68.2%)</td>
<td>467-630 (95.4%)</td>
<td>429-637 (99.7%)</td>
</tr>
<tr>
<td>MC 517***</td>
<td>845 ± 24</td>
<td>1169-1220 (68.2%)</td>
<td>1159-1254 (95.4%)</td>
<td>1049-1084 (1.8%)</td>
<td>1125-1136 (0.2%)</td>
<td>1150-1265 (97.7%)</td>
<td>1220-1235 (26.8%)</td>
</tr>
<tr>
<td>MC 514***</td>
<td>641 ± 21</td>
<td>1294-1310 (25.0%)</td>
<td>1286-1323 (39.4%)</td>
<td>1281-1400 (99.7%)</td>
<td>1321-1350 (50.9%)</td>
<td>1386-1397 (17.3%)</td>
<td>1310-1360 (66.9%)</td>
</tr>
<tr>
<td>MC 533</td>
<td>516 ± 21</td>
<td>1410-1430 (68.2%)</td>
<td>1400-1440 (95.4%)</td>
<td>1323-1346 (2.6%)</td>
<td>1392-1445 (97.1%)</td>
<td>1427-1446 (68.2%)</td>
<td>1416-1452 (95.4%)</td>
</tr>
<tr>
<td>MC 188</td>
<td>2591 ± 27</td>
<td>804-782 BCE (68.2%)</td>
<td>816-761 BCE (95.4%)</td>
<td>831-748 BCE (97.0%)</td>
<td>685-667 BCE (0.9%)</td>
<td>641-587 BCE (1.4%)</td>
<td>659-591 BCE (12.3%)</td>
</tr>
</tbody>
</table>

Table A.3: Calibrated radiocarbon dates of samples recovered from excavation (continued).
Calibrated radiocarbon date plots (standard calibration)

The following calibrated radiocarbon plots are shown with given date ranges at confidence intervals of 68.2% (1-sigma), 95.4% (2-sigma), and 99.7% (3-sigma) probabilities. All radiocarbon dates in this section are from excavation, and use standard calibration methods—i.e., without Bayesian analysis (see below). Two calibrations are given for each radiocarbon date: one using the Northern Hemisphere calibration (IntCal 13) (Riemer et al. 2013) on the left, and one using the Southern Hemisphere calibration (ShCal 13) (Hogg et al. 2013) on the right. They are ordered stratigraphically from earliest to latest by excavation unit.

**Unit I-B**

**Northern Hemisphere Calibration (IntCal13)**

**Southern Hemisphere Calibration (ShCal13)**

This sample was taken from an arbitrary 10-cm level full of Marcavalle-style diagnostic ceramics, probably dating to the Middle Formative Phase.

**Unit II and Extensions**

**Northern Hemisphere Calibration (IntCal13)**

**Southern Hemisphere Calibration (ShCal13)**

This sample was taken from an ash lens full of carbonaceous material, dating stratigraphically to the Mid/Late EIP.
Unit II and Extensions (continued)

This sample was taken from cultural level under a floor context, and dates to the Late EIP.

Figure A.7. Sample: MC 1126, Context 450, Unit II-A, Level N-I

This sample was taken from cultural level associated with a floor context (underlying it), and stratigraphically should date to the late EIP or the early MH; it is most likely an outlier date, and may be the result of a labeling error in the field (see below, “Outlier Analysis,” for discussion).

Figure A.8. Sample: MC 898, Context 430, Unit II-A, Level N-H
Unit II and Extensions (continued)

This sample was taken from a probable floor context, and stratigraphically dates to the MH. It is from the same cultural context as sample MC 886 (see below).

This sample was taken from a probably floor context and stratigraphically dates to the MH. It is from the same cultural context as sample MC 887 (see above).
**Unit II and Extensions (continued)**

**Northern Hemisphere Calibration (IntCal13)**

![Graph 1](image1)

**Southern Hemisphere Calibration (ShCal13)**

![Graph 2](image2)

**Figure A.11. Sample: MC 803, Context 418, Unit II-A and II-B, Level N-G, Feature R-115**

This sample was taken from a section of a small carbonized surface, and dates to the early LIP.

**Figure A.12. Sample: MC 687, Context 415, Unit II-B, Level N-G**

This sample was taken from the fill of a cultural level, and dates to the early LIP.
Unit II and Extensions (continued)

This sample was taken from a section of soil and artifacts sandwiched between a living surface and an architectural feature (A-110) made of rough fieldstone, and dates to the early LIP.

This sample was taken from a small feature of stones and pebbles, mixed with small artifacts, and stratigraphically dates to the early LIP. It may be an outlier date (see below, “Outlier Analysis,” for discussion).
Unit II and Extensions (continued)

This sample was taken from a globular feature located in the north profile wall of Unit II-A, formed by stones and a ceramic vessel which formed the upper boundary of the feature and may have broken in place. The feature dates stratigraphically to the early LIP.

Figure A.15. Sample: MC 810, Context 417, Unit II-A, Level N-F, Feature R-114

This sample was taken from fill deposited as a single event between A-106 and A-110, both constructed during the early LIP, and covered by deposits dating to the late LIP.

Figure A.16. Sample: MC 830, Context 296, Unit II-A, Level N-E, Feature R-111
Unit II and Extensions (continued)

This sample was taken from a circular stone-lined pit (R-101) covered with a layer of stones and filled with dense quantities of broken ceramic vessels, ash and carbon. MC 497 and MC 411 (see below) are both taken from R-101, but Context 287 is from the lower level. The feature dates stratigraphically to the late LIP or early LH transition. This date is likely an outlier (see below, “Outlier Analysis” for discussion).

Figure A.17. Sample: MC 497, Context 287, Unit II-A and II-B, Level N-C, Feature R-101

This sample was taken from a circular stone-lined pit (R-101) covered with a layer of stones and filled with dense quantities of broken ceramic vessels, ash and carbon. MC 411 and MC 497 (see above) are both taken from R-101, but Context 264 is from the upper level. The feature dates stratigraphically to the late LIP or early LH transition.

Figure A.18. Sample: MC 411, Context 264, Unit II-A and II-B, Level N-B, Feature R-101
Unit IV and Extensions

This sample was taken from a small floor constructed of cobblestones, covered by LIP and LH fill and sealing material dating to the EIP.

This sample was taken from a small area inside of a wall foundation constructed in the late LIP (A-121) and sealed from later deposits by wall fall. The context contains a dense layer of LIP ceramics and the deposit dates stratigraphically to sometime during the LIP. Samples MC 517 and MC 514 (see below) are both from the same context (C333). This date is likely an outlier (see below, “Outlier Analysis” for discussion).
This sample was taken from a small area inside of a wall foundation constructed in the late LIP (A-121) and sealed from later deposits by wall fall. The context contains a dense layer of LIP ceramics and the deposit dates stratigraphically to sometime during the LIP. Samples MC 517 (see above) and MC 517 are both from the same context (C333).

This sample was taken from a small lens or shallow pit of soft, ashy soil, demarcated by small stones and located outside of the wall foundation (A-121) separating this context from C333. It dates stratigraphically to the late LIP but contains LIP and Inca material.
Table A.4: Standard calibration and Bayesian modeled date ranges for MC 12, MC 1126, and MC 886.

A = Individual Agreement Index (larger values indicate greater agreement with model; values >60 are in agreement); C = Convergence Integral.

<table>
<thead>
<tr>
<th>Sequence UE II EIP</th>
<th>Unmodeled (CE)</th>
<th>Modeled (CE)</th>
<th>Indices</th>
</tr>
</thead>
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<td>A</td>
</tr>
<tr>
<td>IntCal13</td>
<td>from to %</td>
<td>from to %</td>
<td>from to %</td>
</tr>
<tr>
<td>MC12 (Standard)</td>
<td>435 591 68.2</td>
<td>428 605 95.4</td>
<td>426 636 99.7</td>
</tr>
<tr>
<td>MC 12 (Modeled)</td>
<td>470 580 68.2</td>
<td>431 592 95.4</td>
<td>421 604 99.7</td>
</tr>
<tr>
<td>MC1126 (Standard)</td>
<td>539 591 68.2</td>
<td>431 607 95.4</td>
<td>426 630 99.7</td>
</tr>
<tr>
<td>MC1126 (Modeled)</td>
<td>551 594 68.2</td>
<td>533 617 95.4</td>
<td>440 640 99.7</td>
</tr>
<tr>
<td>MC886 (Standard)</td>
<td>675 764 68.2</td>
<td>666 769 95.4</td>
<td>660 772 99.7</td>
</tr>
<tr>
<td>MC 886 (Modeled)</td>
<td>668 712 68.2</td>
<td>663 767 95.4</td>
<td>658 770 99.7</td>
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</tbody>
</table>

Above: individual plots showing standard calibration and Sequence modeled date ranges. Below: multiplot for MC 12, MC1126, MC 886. Lightly shaded areas indicate standard calibration plots, and darkly shaded areas represent modeled plots following Bayesian analysis.
Phase UE II Early LIP

<table>
<thead>
<tr>
<th>Calibration Curve:</th>
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<th>Modeled (CE)</th>
<th>Indices</th>
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<td>from to %</td>
<td>from to %</td>
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<td>MC 803 (Standard)</td>
<td>998 1037 68.2</td>
<td>989 1147 95.4</td>
<td>982 1154 99.7</td>
</tr>
<tr>
<td>MC 803 (Modeled)</td>
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<td>1006 1045 95.4</td>
<td>987 1125 99.7</td>
</tr>
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<td>1019 1031 68.2</td>
<td>1008 1046 95.4</td>
<td>988 1125 99.7</td>
</tr>
</tbody>
</table>

Table A.5: Standard calibration and Bayesian modeled date ranges for MC 803, MC 687, MC 840, and MC 810.

A = Individual Agreement Index (larger values indicate greater agreement with model; values >60 are in agreement); C = Convergence Integral.

![Figure A.24: Individual calibration plots of MC 803, MC 687, MC 840, and MC 810.](image)

Lightly shaded areas indicate standard calibration plots, and darkly shaded areas represent modeled plots following Bayesian analysis.
<table>
<thead>
<tr>
<th>Lab ID</th>
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<td>similar Inca structures in the Southern Sector of Minaspata.</td>
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<td>Bayesian modeling of SA 3-2 date with a TAQ constraint of 1532 CE.</td>
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<td>Bayesian modeling of SA 3-2 date with a TAQ constraint of 1532 CE.</td>
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<td>Kañarakay Structure 2: an Inca-style building located in a cluster of</td>
<td>329</td>
<td>23</td>
</tr>
<tr>
<td>015305</td>
<td></td>
<td>similar Inca structures in Kañarakay, located adjacent to Minaspata</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>on the shore of Lake Muina. Taken from the mortar inside of a niche.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>KA-2 (1532)</td>
<td>Bayesian modeling of KA-2 date with a TAQ constraint of 1532 CE.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D-AMS</td>
<td>CH SA-7 (A)</td>
<td>A <em>chullpa</em> burial tower located in a cluster of Inca-style structures</td>
<td>432</td>
<td>24</td>
</tr>
<tr>
<td>014063</td>
<td></td>
<td>(Salteryoq) in the southern sector of Minaspata. Same sample as CH</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>SA-7 (B).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D-AMS</td>
<td>CH SA-7 (B)</td>
<td>A <em>chullpa</em> burial tower located in a cluster of Inca-style structures</td>
<td>387</td>
<td>22</td>
</tr>
<tr>
<td>014064</td>
<td></td>
<td>(Salteryoq) in the southern sector of Minaspata. Same sample as CH</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>SA-7 (A).</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CH SA-7</td>
<td>Combined date of CH SA-7 (A) and (B), using OxCal software.</td>
<td>408</td>
<td>17</td>
</tr>
<tr>
<td>(A/B)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CH SA-7</td>
<td>Bayesian modeling of CH SA-7 combined date with a TAQ constraint of</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1532)</td>
<td></td>
<td>1532 CE.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D-AMS</td>
<td>CH A3-4 (A)</td>
<td>A <em>chullpa</em> burial tower located in the eastern sector of Minaspata,</td>
<td>367</td>
<td>20</td>
</tr>
<tr>
<td>014065</td>
<td></td>
<td>located outside of the far end of the defensive wall. Same sample as</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CH A3-4 (B).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D-AMS</td>
<td>CH A3-4 (B)</td>
<td>A <em>chullpa</em> burial tower located in the eastern sector of Minaspata,</td>
<td>375</td>
<td>24</td>
</tr>
<tr>
<td>014066</td>
<td></td>
<td>located outside of the far end of the defensive wall. Same sample as</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CH A3-4 (A).</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CH A3-4</td>
<td>Combined date of CH A3-4 (A) and (B), using OxCal software.</td>
<td>370</td>
<td>16</td>
</tr>
<tr>
<td>(A/B)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A3-4 (1532)</td>
<td>Bayesian modeling of CH A3-4 combined date with a TAQ constraint of</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1532 CE.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D-AMS</td>
<td>CH CA-A (A)</td>
<td>A <em>chullpa</em> burial tower located a few hundred meters south of</td>
<td>317</td>
<td>23</td>
</tr>
<tr>
<td>014067</td>
<td></td>
<td>Minaspata, atop the canal which runs through the site. Same sample as</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CH CA-A (B).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D-AMS</td>
<td>CH CA-A (B)</td>
<td>A <em>chullpa</em> burial tower located a few hundred meters south of</td>
<td>258</td>
<td>26</td>
</tr>
<tr>
<td>014068</td>
<td></td>
<td>Minaspata, atop the canal which runs through the site. Same sample as</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CH CA-A (A).</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CH CA-A</td>
<td>Combined date of CH A3-4 (A) and (B), using OxCal software.</td>
<td>291</td>
<td>18</td>
</tr>
<tr>
<td>(A/B)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table A.6: Identifying and contextual information on radiocarbon dates recovered from standing architecture in and around Minaspata.

Shaded rows represent dates processed using Bayesian analysis (Table A.7).
<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Age BP</th>
<th>IntCal13 1σ (68.2%) CI</th>
<th>IntCal13 2σ (95.4%) CI</th>
<th>IntCal13 3σ (99.7%) CI</th>
<th>ShCal13 1σ (68.2%) CI</th>
<th>ShCal13 2σ (95.4%) CI</th>
<th>ShCal13 3σ (99.7%) CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>SA 3-2</td>
<td>366 ± 21</td>
<td>1465-1516 (46.8%) CI</td>
<td>1559-1664 (1.3%) CI</td>
<td>1538-1635 (41.0%) CI</td>
<td>1501-1520 (13.2%) CI</td>
<td>1537-1595 (44.4%) CI</td>
<td>1612-1627 (10.5%) CI</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1570-1631 (36.5%) CI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA 3-2 (1532)</td>
<td></td>
<td>1469-1513 (68.2%) CI</td>
<td>1455-1521 (95.4%) CI</td>
<td>1446-1529 (99.7%) CI</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA 6-1</td>
<td>430 ± 25</td>
<td>1437-1464 (68.2%) CI</td>
<td>1426-1489 (94.4%) CI</td>
<td>1416-1518 (97.2%) CI</td>
<td>1453-1497 (68.2%) CI</td>
<td>1445-1509 (74.6%) CI</td>
<td>1438-1525 (75.8%) CI</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1604-1608 (1.0%) CI</td>
<td></td>
<td></td>
<td>1580-1621 (20.8%) CI</td>
<td></td>
</tr>
<tr>
<td>SA 6-1 (1532)</td>
<td></td>
<td>1437-1462 (68.2%) CI</td>
<td>1429-1484 (95.4%) CI</td>
<td>1419-1512 (99.7%) CI</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KA-2</td>
<td>329 ± 23</td>
<td>1500-1502 (1.4%) CI</td>
<td>1512-1529 (11.6%) CI</td>
<td>1559-1673 (9.6%) CI</td>
<td>1511-1550 (35.6%) CI</td>
<td>1504-1590 (66.1%) CI</td>
<td>1490-1662 (99.7%) CI</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1542-1601 (42.3%) CI</td>
<td></td>
<td>1622-1645 (22.9%) CI</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1617-1634 (10.0%) CI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KA-2 (1532)</td>
<td></td>
<td>1495-1532 (68.2%) CI</td>
<td>1474-1532 (95.4%) CI</td>
<td>1456-1532 (99.7%) CI</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CH SA-7 (A)</td>
<td>432 ± 24</td>
<td>1436-1462 (68.2%) CI</td>
<td>1416-1515 (98.1%) CI</td>
<td>1504-1620 (18.3%) CI</td>
<td>1445-1508 (77.1%) CI</td>
<td>1585-1620 (18.3%) CI</td>
<td>1437-1519 (78.5%) CI</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1600-1619 (1.6%) CI</td>
<td></td>
<td>1538-1626 (21.2%) CI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CH SA-7 (B)</td>
<td>387 ± 22</td>
<td>1450-1491 (58.8%) CI</td>
<td>1443-1522 (76.3%) CI</td>
<td>1439-1526 (76.9%) CI</td>
<td>1480-1511 (24.8%) CI</td>
<td>1461-1525 (36.7%) CI</td>
<td>1455-1635 (99.7%) CI</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1578-1582 (0.6%) CI</td>
<td></td>
<td>1552-1557 (2.9%) CI</td>
<td>1535-1627 (58.7%) CI</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1591-1620 (18.5%) CI</td>
<td></td>
<td>1575-1622 (40.6%) CI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CH SA-7 (A/B)</td>
<td>408 ± 17</td>
<td>1446-1471 (68.2%) CI</td>
<td>1440-1490 (93.2%) CI</td>
<td>1435-1515 (96.2%) CI</td>
<td>1462-1500 (51.4%) CI</td>
<td>1454-1510 (62.3%) CI</td>
<td>1450-1524 (63.1%) CI</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1603-1609 (2.2%) CI</td>
<td></td>
<td>1597-1611 (16.8%) CI</td>
<td>1576-1623 (33.1%) CI</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1599-1619 (3.5%) CI</td>
<td></td>
<td></td>
<td>1536-1627 (36.6%) CI</td>
<td></td>
</tr>
</tbody>
</table>

**Table A.7: Calibrated radiocarbon dates of samples recovered from standing architecture.**

Shaded rows represent date ranges obtained using Bayesian analysis.
<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Age BP</th>
<th>IntCal13 1σ (68.2%) CI</th>
<th>IntCal13 2σ (95.4%) CI</th>
<th>IntCal13 3σ (99.7%) CI</th>
<th>ShCal13 1σ (68.2%) CI</th>
<th>ShCal13 2σ (95.4%) CI</th>
<th>ShCal13 3σ (99.7%) CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH SA-7</td>
<td>1532</td>
<td>1446-1470 (68.2%)</td>
<td>1441-1487 (95.4%)</td>
<td>1436-1511 (99.7%)</td>
<td>1501-1517 (12.4%)</td>
<td>1539-1595 (45.2%)</td>
<td>1612-1626 (10.6%)</td>
</tr>
<tr>
<td>CH A3-4</td>
<td>367 ± 20</td>
<td>1465-1515 (47.9%)</td>
<td>1452-1524 (59.8%)</td>
<td>1446-1531 (60.4%)</td>
<td>1539-1595 (45.2%)</td>
<td>1542-1625 (55.6%)</td>
<td>1489-1633 (95.4%)</td>
</tr>
<tr>
<td>CH A3-4</td>
<td>375 ± 24</td>
<td>1455-1513 (52.7%)</td>
<td>1448-1523 (63.9%)</td>
<td>1442-1532 (64.4%)</td>
<td>1496-1515 (12.6%)</td>
<td>1478-1631 (95.4%)</td>
<td>1457-1641 (99.7%)</td>
</tr>
<tr>
<td>CH A3-4</td>
<td>370 ± 16</td>
<td>1464-1498 (42.0%)</td>
<td>1451-1523 (65.5%)</td>
<td>1447-1525 (66.7%)</td>
<td>1500-1515 (12.2%)</td>
<td>1490-1630 (95.4%)</td>
<td>1463-1637 (99.7%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1601-1616 (19.6%)</td>
<td>1575-1624 (29.9%)</td>
<td>1556-1634 (33.0%)</td>
<td>1541-1597 (44.6%)</td>
<td>1611-1625 (11.5%)</td>
<td>1500-1515 (12.2%)</td>
</tr>
<tr>
<td>A3-4</td>
<td>1532</td>
<td>1464-1497 (60.5%)</td>
<td>1454-1517 (95.4%)</td>
<td>1447-1524 (99.7%)</td>
<td>1513-1545 (31.1%)</td>
<td>1507-1587 (54.3%)</td>
<td>1496-1669 (99.7%)</td>
</tr>
<tr>
<td>CH CA-A</td>
<td>317 ± 23</td>
<td>1521-1591 (53.5%)</td>
<td>1490-1603 (74.7%)</td>
<td>1468-1650 (99.7%)</td>
<td>1516-1624 (37.1%)</td>
<td>1507-1587 (54.3%)</td>
<td>1496-1669 (99.7%)</td>
</tr>
<tr>
<td>CH CA-A</td>
<td>258 ± 26</td>
<td>1637-1666 (58.1%)</td>
<td>1521-1575 (19.1%)</td>
<td>1493-1602 (21.2%)</td>
<td>1646-1672 (37.8%)</td>
<td>1638-1677 (44.4%)</td>
<td>1511-1550 (0.7%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1620-1640 (14.7%)</td>
<td>1612-1645 (20.7%)</td>
<td>1616-1681 (61.9%)</td>
<td>1745-1758 (12.4%)</td>
<td>1735-1800 (51.0%)</td>
<td>1622-1696 (46.6%)</td>
</tr>
<tr>
<td>CH CA-A</td>
<td>291 ± 18</td>
<td>1527-1554 (43.3%)</td>
<td>1521-1592 (62.7%)</td>
<td>1491-1603 (65.6%)</td>
<td>1635-1659 (68.2%)</td>
<td>1514-1544 (7.2%)</td>
<td>1506-1585 (9.7%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1633-1647 (24.9%)</td>
<td>1620-1652 (32.7%)</td>
<td>1615-1662 (34.1%)</td>
<td>1625-1670 (87.4%)</td>
<td>1787-1793 (0.8%)</td>
<td>1743-1766 (0.7%)</td>
</tr>
</tbody>
</table>

Table A.7: Calibrated radiocarbon dates of samples recovered from standing architecture (continued).
Figure A.25: Multiplots of radiocarbon dates taken from standing architecture at Minaspata. Top: calibrated dates using the IntCal13 calibration curve. Bottom: calibrated dates using ShCal13 calibration curve. Dates plotted from CH SA-7, CH A3-4, and CH CA-A use the combined dates.

Figure A.26: Multiplot of radiocarbon dates taken from standing architecture in and around Minaspata, using terminus ante quem date of 1532 CE. Probabilities calculated using Bayesian statistical analysis. Lightly shaded areas indicate original date range probabilities calibrated using IntCal13; darker areas indicate the posterior probabilities after Bayesian analysis. Dates plotted from CH SA-7, CH A3-4, and CH CA-A use the combined dates. (CH CA-A was not processed in this manner, as it likely dates after 1532 CE.)
Figure A.27: Individual plots of SA 3-2, and plot using TAQ Bayesian date constraint of 1532 CE (IntCal13).

Figure A.28: Individual plots of SA 6-1, and plot using a TAQ Bayesian date constraint of 1532 CE (IntCal13).
Figure A.29: Individual plots of KA-2, and plot using TAQ Bayesian date constraint of 1532 CE (IntCal13).
Figure A.30: Individual standard calibration plots for CH SA-7 (A) (top) and (B) (bottom).

Figure A.31: CH SA-7 calibration plots showing probabilities after Bayesian analysis.

Left: CH SA-7 (A) and (B) combined into one date. Right: CH SA-7 combined date analyzed using at terminus ante quem constraint of 1532 CE. Both calibration plots use the IntCal13 calibration curve.
Figure A.32: Individual standard calibration plots for CH A3-4 (A) (top) and (B) (bottom).

Figure A.33: CH A3-4 calibration plots showing probabilities after Bayesian analysis.

Left CH A3-4 (A) and (B) combined into one date. Right: CH A3-4 combined date analyzed using at terminus ante quem constraint of 1532 CE. Both calibration plots use the IntCal3 calibration curve.
Figure A.34: Individual standard calibration plots for CH CA-A (A) (top) and (B) (bottom).

Figure A.35: Individual calibration plot showing CH CA-A (A) and (B) combined into one date (IntCal13).
Table A.8: Calibrated dates of structures from Salteryoq after Bayesian Phase modeling.

Shaded rows are date ranges obtained from Phase modeling (“Modeled”), and from Phase modeling combined with a TAQ date constraint of 1532 CE (“1532, Modeled”).

<table>
<thead>
<tr>
<th>Phase Salteryoq</th>
<th>Calibration Curve:</th>
<th>Unmodelled (CE)</th>
<th>Modeled (CE)</th>
<th>Agreement Indices</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IntCal13</td>
<td>from</td>
<td>to</td>
<td>%</td>
</tr>
<tr>
<td>SA 3-2 (Standard)</td>
<td>1465</td>
<td>1618</td>
<td>68.2</td>
<td>1452</td>
</tr>
<tr>
<td>SA 3-2 (Modeled)</td>
<td>1452</td>
<td>1485</td>
<td>68.2</td>
<td>1445</td>
</tr>
<tr>
<td>SA 3-2 (1532, Modeled)</td>
<td>1452</td>
<td>1482</td>
<td>68.2</td>
<td>1449</td>
</tr>
<tr>
<td>SA 6-1 (Standard)</td>
<td>1437</td>
<td>1464</td>
<td>68.2</td>
<td>1426</td>
</tr>
<tr>
<td>SA 6-1 (Modeled)</td>
<td>1442</td>
<td>1467</td>
<td>68.2</td>
<td>1434</td>
</tr>
<tr>
<td>SA 6-1 (1532, Modeled)</td>
<td>1443</td>
<td>1466</td>
<td>68.2</td>
<td>1434</td>
</tr>
<tr>
<td>CH SA-7 (Standard)</td>
<td>1446</td>
<td>1471</td>
<td>68.2</td>
<td>1440</td>
</tr>
<tr>
<td>CH SA-7 (Modeled)</td>
<td>1448</td>
<td>1468</td>
<td>68.2</td>
<td>1442</td>
</tr>
<tr>
<td>CH SA-7 (1532, Modeled)</td>
<td>1448</td>
<td>1468</td>
<td>68.2</td>
<td>1443</td>
</tr>
</tbody>
</table>

Figure A.36: Multiplot of calibrated radiocarbon dates taken from Inca-style structures in the southern sector of Minaspata (Salteryoq).

Top: SA 3-2, SA 6-1, and CH SA-7 subject to a Bayesian Phase model. Bottom: The same dates subject to a Bayesian Phase model, with an additional TAQ date constraint of 1532 CE. Both multiplots use the IntCal13 calibration curve. CH SA-7 is the combined date.
Figure A.37: Individual calibrated plots of SA 3-2, subject to Bayesian analysis.

Left: SA 3-2 subject to a Phase model. Right: SA 3-2 subject to Phase model with TAQ constraint of 1532 CE. Both individual plots use the IntCal13 calibration curve.

Figure A.38: Individual calibrated plots of SA 6-1, subject to Bayesian analysis.

Left: SA 6-1 subject to a Phase model. Right: SA 6-1 subject to Phase model with TAQ constraint of 1532 CE. Both individual plots use the IntCal13 calibration curve.

Figure A.39: Individual calibrated plots of CH SA-7, subject to Bayesian analysis.

Left: CH SA-7 subject to a Phase model. Right: CH SA-7 subject to Phase model with TAQ constraint of 1532 CE. Both plots use the IntCal13 calibration curve. Radiocarbon date used is the combined date of CH SA-7 (A) and (B) (408 + 17 BP).
APPENDIX B

P-XRF SOURCE CHARACTERIZATION OF OBSIDIAN FROM MINASPATA, PERU: ANALYTICAL REPORT 2016

David A. Reid
The Field Museum
University of Illinois at Chicago

Summary of Investigation

This report presents the analytical findings of Portable XRF analysis of 155 obsidian artifacts from the site Minaspata in Lucre Basin, Cuzco, Peru. Principal investigator Tom Hardy conducted laboratory analysis of these materials on July 25th and 26th of 2014 using the InnovX Alpha P-XRF provided by the Field Museum of Chicago’s Elemental Analysis Facility (EAF) under supervision of Dr. Patrick Ryan Williams.

Of the 155 artifacts analyzed, 144 specimens were geochemically assigned to known Andean obsidian sources (Alca, Chivay, Quispisisa).

Methods

_Elemental Analysis: Portable-XRF_

Analysis was conducted using an Innov-X Systems Alpha™ portable X-ray fluorescence device. The instrument utilizes a tungsten target collected by a Si PIN diode detector, with an energy resolution of less than 230 keV for the Mn Ka line. Obsidian materials were analyzed using “soils” mode which uses a 40 keV beam
voltage and 20 mA current to detect “heavy elements” (Zn, Rb, Sr, Zr, Nb) and “light elements” (K, Ca, Ti, Mn, Fe). Data was collected for 90 seconds for each sample following previously established EAF protocols (Golitko et al. 2010; Meierhoff et al. 2010; Kellett et al. 2013).

Instrument Precision: Analytical Standards

During analysis of artifact materials, two obsidian standards are run at the beginning and end of each day of analysis. The standards include obsidian procured from the sources El Chayal, Guatemala (standard code: ELC001) and Snake River, US (standard code: CRB2005). The two obsidian standards were run by Hardy a total of six times each throughout the two days of analysis to track the precision of the device. For the elements of interest (Mn, Fe, Rb, Sr, Zr) the relative standard deviation per element indicates a high instrument precision/reproducibility throughout the analysis (< 5%) (Table B.1).

Table B.1: Relative Standard Deviation of obsidian standards CRB2005 and ELC001 run throughout the P-XRF analysis indicating high instrument precision/reproducibility for elements of interest (Mn, Fe, Rb, Sr, Zr).

<table>
<thead>
<tr>
<th>Sample</th>
<th>K (ppm)</th>
<th>Ca (ppm)</th>
<th>Ti (ppm)</th>
<th>Mn (ppm)</th>
<th>Fe (ppm)</th>
<th>Zn (ppm)</th>
<th>Rb (ppm)</th>
<th>Sr (ppm)</th>
<th>Zr (ppm)</th>
<th>Nb (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRB2005</td>
<td>1.50268</td>
<td>4.446861</td>
<td>19.11949</td>
<td>3.937575</td>
<td>1.093079</td>
<td>4.219953</td>
<td>1.291915</td>
<td>n.d.</td>
<td>2.070862</td>
<td>0.864074</td>
</tr>
</tbody>
</table>

Accuracy:

Accuracy is termed in the relation to the chemical measurement and the extent of error (the measurement minus a true value of the measurand) that is calculated by the
Innov-X Alpha for each run. Each measured value contains an error (e.g. Rb: 240.28 ± 3.57 = error % of 0.0149). The following table provides the averaged error (as percentage) for each element of interest, indicating an acceptable error (< 5%) range for the elements of interest (Mn, Fe, Rb, Sr, Zr).

<table>
<thead>
<tr>
<th>Element</th>
<th>K</th>
<th>Ca</th>
<th>Ti</th>
<th>Mn</th>
<th>Fe</th>
<th>Zn</th>
<th>Rb</th>
<th>Sr</th>
<th>Zr</th>
<th>Nb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Error</td>
<td>2.3%</td>
<td>5.2%</td>
<td>13.2%</td>
<td>3.9%</td>
<td>1.8%</td>
<td>17.3%</td>
<td>2.8%</td>
<td>3.7%</td>
<td>3.3%</td>
<td>21.7%</td>
</tr>
</tbody>
</table>

Table B.2: Accuracy of measurements as indicated by the average % error for elements of interest (Mn, Fe, Rb, Sr, Zr).

**Andean Geologic Samples:**

Geologic samples from the three major Andean volcanic sources were analyzed post-field at the EAF in Chicago. This analysis used the same instrumentation and settings as those conducted in the field for the Minaspata materials. As indicated by Rademaker et al. (2013), systematic geologic sampling of the Alca source in the department of Arequipa detected six geochemically discrete Alca sub-sources. Prior obsidian characterization studies have indicated that Alca-1 was predominantly utilized throughout prehistory (Burger et al. 1998, 2000; Jennings and Glascock 2002), yet it is unclear as to what extent the smaller Alca sub-sources were used. To address this problem, the following geologic sub-samples were loaned by Kurt Rademaker (Northern Illinois University) for the calibration of the Field Museum P-XRF instruments. A single sample from the volcanic sources of Quispisisa (QSP001) and Chivay (CHV001) were also run as geologic references a total of three times each with averages reported. The
following table indicates the number of geologic samples used to cross-reference archaeological materials (Table B.3).

<table>
<thead>
<tr>
<th>Geologic Source</th>
<th>Chivay</th>
<th>Quispisisa</th>
<th>Alca 1</th>
<th>Alca 2</th>
<th>Alca 3</th>
<th>Alca 4</th>
<th>Alca 5</th>
<th>Alca 7</th>
</tr>
</thead>
<tbody>
<tr>
<td># of samples analyzed</td>
<td>1</td>
<td>1</td>
<td>7</td>
<td>3</td>
<td>8</td>
<td>6</td>
<td>7</td>
<td>7</td>
</tr>
</tbody>
</table>

Table B.3: Number of geologic source samples used to assign obsidian character groups.

**Calibration:**

The Field Museum Elemental Analysis Facility (EAF) has developed calibration protocols for the Innov-X Alpha portable XRF device. Calibration using in house and certified standards correct the output of elemental readings making them comparable to true values published by other labs. This allowed us to compare the character groups derived from the Minaspata materials to the averaged Andean-source true values as recorded by Glascock et al. (2007) for XRF, which further corroborates this study’s group characterizations.

**Specimens Removed from the Study**

Of the 155 artifacts analyzed, 144 were geochemically assigned to known Andean obsidian sources: Alca-1, Alca-7, Chivay, and Quispisisa. The remaining eleven specimens could not reliably be assigned to a geochemical group, likely due to issues of sample size, thickness, or irregular surface area. As the eleven specimens do not consistently cluster together when comparing various elemental biplots, this suggests these specimens are not of a single unknown geologic source, but rather poor measurements. Six of the eleven samples have problematic values as described in the
table below. However, principal component analysis groups these specimens (excluding #8287) strongly with Alca-1 rather than Quispisisa. When comparing Sr vs. Rb, their position also suggests this may be the distal end of the Alca-1 group, though further analysis is necessary. If sample size is not at issue, these may be ideal specimens for export for ICP-MS or INAA. Future P-XRF analysis should also measure each specimen a total of three times to prevent the chances of poor measurements based on irregular surface or machine error.

<table>
<thead>
<tr>
<th>Specimen #</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>8287</td>
<td>recorded as small specimen; Zn below detectable range</td>
</tr>
<tr>
<td>8288</td>
<td>likely not obsidian: Sr below detectable range; Rb extremely high</td>
</tr>
<tr>
<td>8298</td>
<td>recorded as small specimen</td>
</tr>
<tr>
<td>8382</td>
<td>recorded as small specimen; Zn below detectable range</td>
</tr>
<tr>
<td>8390</td>
<td>Zn below detectable range (too small?)</td>
</tr>
<tr>
<td>8469</td>
<td>recorded as small specimen; Zn and Nb below detectable range</td>
</tr>
<tr>
<td>8302, 8354, 8292, 8415, 8374</td>
<td></td>
</tr>
</tbody>
</table>

Table B.4: Specimens removed from study.

Results

Statistical Analysis:

Elements of interest for this study include manganese (Mn), iron (Fe), rubidium (Rb), strontium (Sr), and zirconium (Zr). After calibrating the raw data using EAF protocols and removing any outliers, the data was log transformed for use in the statistical software JMP 12.1.0. Principal Component Analysis was then conducted using elements Mn, Rb, Sr, and Zr (Figure B.1). Using the first two principal components,
Ward hierarchical cluster analysis was run to assign each specimen its respective character group. The hierarchical analysis correctly distinguished the Alca geologic sub-sources supporting its accuracy.

*Group Characterizations:*

Character groups are presented with 95% confidence ellipses including both artifact and geologic source samples. Principal component analysis including Mn, Rb, Sr, and Zr shows discrete geologic groups pertaining to Alca-1, Alca-7, Quispisisa, and Chivay (Figure B.2). While the Sr vs. Rb biplot (Figure B.3) indicates some overlap between groups, a further analysis using Sr/Zn vs. Mn discretely separates out overlapping samples in comparison to known Andean obsidian values from Glascock et al. 2007 and Kellett et al. 2013 supporting the initial groupings by principal component analysis (Figure B.4).

<table>
<thead>
<tr>
<th>Source</th>
<th>Alca-1</th>
<th>Alca-7</th>
<th>Quispisisa</th>
<th>Chivay</th>
</tr>
</thead>
<tbody>
<tr>
<td>n =</td>
<td>128</td>
<td>1</td>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>

*Table B.5: Source characterization of all Moquegua obsidian artifacts.*
Figure B.1. Principal component analysis of Mn, Rb, Sr, and Zr.
Character groups include both artifact and geologic source samples with 95% confidence intervals. Artifact samples are represented as open symbols and geological source samples are closed symbols. Glascock et al. 2007 XRF averages corroborate group assignments (plus symbols).
Averaged XRF values from Glascock et al. 2006:Table II are presented as plus symbols for Alca-1, Chivay, and Quispispa corroborating character group assignment (color and symbol). Artifact specimens are displayed as open symbols, whereas geological samples are closed symbols.

Figure B.3. Bivariate plot of Sr vs. Rb with 95% confidence intervals of character groups determined by Ward cluster analysis of artifact and geologic samples.
This study’s character groups (solid ellipses) are compared to Kellett et al. 2013 group values (dashed ellipses) using the same Innov-X P-XRF instrument and settings. Averaged XRF values reported by Glascock et al. 2007 (plus symbols) corroborate this study’s findings. Character groups were assigned based on Ward Cluster Analysis and displayed by color and symbol. Artifact specimens are displayed as open symbols, whereas geologic source samples are closed symbols.

Key: Aconcahua (ACH); Alca-1 (ALC1); Caylloma (CYL); Cerro Ticllago (CRT); Chivay (CHV); Jampatilla (JMP); Lisahuacho (LSH); Potreopampa (PTP); Puzolana (PZL); Quispisisa (QSP); UyoUyo (UYO); Yanarangra (YNG)

Figure B.4. Plot of Sr/Zr vs. Mn of portable x-ray fluorescence (P-XRF) values from Peruvian obsidian sources with 95% confidence ellipses.
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