Crucible of Andean Civilization

The Peruvian Coast from 3000 to 1800 BC

by Jonathan Haas and Winifred Creamer

The focus of the development of the first complex, centralized societies on the coast of Peru between 3000 and 1800 BC was a portion of the coast known as the Norte Chico, where more than 30 large Late Archaic sites with monumental platform mounds, ceremonial plazas, and residential architecture have now been identified. Differing theories have been offered to explain the emergence of complex polities in this region. New settlement and radiocarbon data suggest an alternative theoretical model that posits a regional sphere of interaction with a dominant political nexus in the Norte Chico region and participation by maritime fishing communities up and down the coast.

Why do we have government? What role does government play in society? How do some people come to exercise power over others? These basic questions about the complex organization of society have played a central role in anthropological and political theory since the inception of these disciplines. This paper examines recent archaeological work in the Andean region to add further empirical insight into these questions. The Andean region is widely recognized as the locus of development of one of the world’s six major independent civilizations (Mesopotamia, Egypt, India, China, Mesoamerica, and the Andes). Although “civilization” has been defined in many different ways, in a global sense it is taken to apply to those few exceptional cultures that develop formal institutions of government (sometimes referred to as the “state”), urban centers, organized religion and art, monumental construction projects, marked social stratification, and a highly productive agricultural economy (Trigger 2003; see also Moseley 1975, 3). In order to investigate the cross-cultural process of their emergence in the Andes directly, it is necessary to look at the period when Andean people were making the initial transition from relatively simple to complex forms of social, economic, and religious organization. These emergent societies are “complex” in the sense of having many different parts and many different social, economic, and political roles, including centralized leadership. There is a growing body of evidence suggesting that this transition from simple to highly complex societies first took place in the Andean region during the Late Archaic period, from about 3000 to 1800 BC (all radiocarbon dates are calibrated; see Burger 1995; Moseley 2001; Richardson 1994; Wilson 1999). It was during this time that the relatively simple cultural systems of nomadic hunting, fishing, and gathering underwent a major transformation to a much more complex level of social, economic, and ceremonial organization (Haas and Creamer 2004). Ephemeral campsites and small fishing villages were replaced by permanent residential and ceremonial centers with irrigation agriculture and large-scale communal architecture. The communal architecture in turn is a key indicator of the appearance of stable forms of centralized leadership and decision making as well as a formally organized religion.

It was in a fairly short period of time between about 3100 and 2900, at the beginning of the Late Archaic, that one small area, known as the Norte Chico (“Little North”), witnessed a stable and qualitative evolutionary change that resulted in a significant and permanent increase in the complexity of the cultural system and made the region the crucible for an emergent Andean civilization. The Norte Chico was the first region to undergo a transformation that involved the appearance of large ceremonial/residential centers with monumental architecture, the advent of distinctive religious/ceremonial architecture (Williams 1972, 1980, 1985), a differentiation between maritime-oriented coastal sites and inland agricultural sites, specialized fishermen and agriculturalists, the emergence of locally (as opposed to regionally) centralized decision making, new kinds of relationships between respondent populations and power-holding elites (Haas, Creamer, and Ruiz 2005),

1. Raw radiocarbon dates from published sources have been recalibrated using Calib 4.4 (Stuiver and Reimer 1993; Stuiver et al. 1998) to provide appropriately comparable dates. Individual cal BC dates represent a calculated median date and are given only as an approximate age. They do not fully reflect the statistical range of possible dates for any given analyzed radiocarbon sample.

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and distinct differences in status and rank (Shady and Leyva 2003). From these beginnings in the third millennium BC the Andean region moved onto a new trajectory that ultimately led to such classic and highly complex Andean civilizations as the Moche, Wari, Nazca, Chimú, Tiwanaku, and Inca. Examination of the emergence of the earliest stages of civilization in the Andes makes it clear that the Peruvian coast resembles “crucible” areas in other parts of the world—such as the Deh Luran Plain of Iraq, the Olmec heartland of Mexico, and the Nile Valley of Egypt—in some ways and not in others.

Anthropologically, the transformation of the Norte Chico cultural system at the turn of the third millennium BC is interesting for three reasons:

1. It takes place in a context that corresponds to what Fried (1967) would call a politically “pristine” situation (see also Haas 1982; cf. Shady 2003a, 2003d; Shady and Leyva 2003). Although there was certainly some form of interaction between the Norte Chico and outside areas, there are no indications that there was an existing outside polity that was more complex and exerted influence over the evolution of the Norte Chico system.

2. It endured. The first appearance of large sites with monumental and ceremonial architecture at around 3100 BC was followed by at least 1,300 years of cultural continuity (Haas, Creamer, and Ruiz 2004). This was not an episodic phenomenon but a lasting transformation that put the region on the evolutionary pathway to a unique Andean civilization. Furthermore, subsequent development to the north and south on the coast as well as to the east in the highlands can be directly traced to Norte Chico antecedents. Large platform mounds with associated sunken circular plazas quite similar to those found throughout the Norte Chico in the Late Archaic appear in the Initial period (1800–1000 BC) in the Casma Valley (Williams 1985; S. Pozorski and T. Pozorski 1986, 1990; Pozorski 1992; T. Pozorski and S. Pozorski 2000) to the north and the Lurin Valley to the south (Burger and Salazar-Burger 1991). The same pattern is also a dominant element in the site layout of the Early Horizon (1000–200 BC) highland center of Chavin de Huantar, just northeast of the Norte Chico (Lumbreras 1970, 1971; Burger 1992). Thus the beginnings of a distinctive Andean civilization can be traced directly to the Late Archaic occupation of the Norte Chico.

3. It happened very quickly. In other world areas, the development of similar levels of cultural complexity took place over millennia (e.g., Wright and Johnson 1975; Liu and Chen 2003; Manzanilla 2001), while in the Norte Chico it took only a few centuries. Prior to about 3100 BC there were no large, organized urban/ceremonial centers with monumental communal architecture anywhere in the Peruvian landscape. Then, in the Norte Chico, by no later than 2800 there were multiple large sites, all with diverse residential complexes, large platform mounds, and circular plazas.

Overall, the Norte Chico makes an ideal archaeological laboratory for examining the endogenous emergence of a hierarchical, stratified cultural system under pristine conditions.

Complexity, Chiefdoms, and States

One issue that arises in the study of the development of complex societies is the application of broad evolutionary stages. Specifically, in Peru there has been considerable discussion of whether a society is a state or chiefdom and when the first states or chiefdoms may have arisen. However, in the Andean region there is little agreement on how to distinguish states and chiefdoms anthropologically or in the archaeological record. Feldman (1983), for example, argues that the coastal Late Archaic (3000 to 1800 BC) site of Aspero, located at the mouth of the Supe Valley, was a chiefdom. Shady (2003a, 94–95) argues that the inland site of Caral, a contemporary of Aspero in the Supe Valley, was the capital of the first pristine state in the Andes in the Late Archaic. Lumerbas (1972, 1974, 1981, 1989) makes a case for the Chavin culture representing the first state society in Peru (see also Kembel and Rick 2004). The Pozorskis (S. Pozorski and T. Pozorski 1987) argue that a state society first arose in the Casma Valley during the Initial period. Stanish (2001) and Billman (2002) in contrast, argue that the first states to arise in the Andean region developed only in the Early Intermediate period, between 200 BC and AD 600. Isbell and Schreiber (1978) date the emergence of the state even later, to the Middle Horizon, between AD 600 and 1000. Although in some ways the distinction between states and chiefdoms helps to clarify issues in the development of cultural systems (Service 1975; Haas 1982; Creamer and Haas 1985; Feinman and Marcus 1998; Grinin et al. 2004; Brumfiel 1994; Earle 1987, 1991); in others it seems to obfuscate them (see Yoffee 2005). Rather than attempt a definition or make an effort to refine and operationalize the labels of state and chiefdom in the present context, we will use the more general though still slippery concept of cultural “complexity” to examine the very beginnings of a distinctive Andean civilization.

The utility of such a vague concept as “complexity” may also be questioned, and with good reason (see, e.g., Salzman 1999), but when the problems are recognized and addressed the term can be productively used to describe sociopolitical variation. Clearly, all human cultural systems are complex, and increased complexity might be measured in myriad different ways. Nevertheless, the idea of the transformation of cultural systems from relatively “simple” to relatively “complex” provides a useful heuristic guide for demarcating critical transitions in the evolution of cultural systems in the Andean region.

An analogy with music may be helpful in this context. Beethoven’s piano étude Für Elise, for example, is a relatively

2. The term “Late Archaic” is used here to facilitate comparison across the regions of Peru. This period is also referred to as the “Late Preceramic,” “Cotton Preceramic,” or “Upper Archaic.” While “archaic” carries unfortunate connotations of “early” and “relatively simple,” the term “preceramic” is not widely applied away from the Peruvian coast and also presents problems in terms of distinguishing “preceramic” occupations from “aceramic” occupations (S. Pozorski and T. Pozorski 1990).
simple piece of music. It was written for a single instrument, the piano, and it is simple enough in terms of its structure that it is often used for practice by beginning piano students. Beethoven's Quartet in A Minor, op. 132, for two violins, a viola, and a cello, is a more complex piece of music in that it involves more players and instruments playing different parts. Beethoven's Ninth Symphony, in turn, is so much more complex that in addition to more instruments and players, it requires a leader to pull all the different parts together. Finally, Beethoven's opera Fidelio, with singers and drama along with orchestral music, is an even more complex piece, with different kinds of agents in a wide variety of interacting roles—stars, chorus, brass, strings, percussion, conductor, prompter, and so on. Cultural complexity can be viewed similarly.

As cultural systems evolve, they add more parts; human agents assume a wider range of social roles or what Gearing (1962) called "structural poses." In response to changing cultural, demographic, and environmental conditions, new social forms may emerge with more types of social roles and more people playing those roles. One of the major turning points is the introduction of the leader, who assumes a fundamentally different and central role in decision making and coordination of the diverse parts. In no way does this evolutionary development of more complex cultural systems represent "progress," going from poor to rich or good to better, just as Fidelio does not represent "progress" over Für Elise.

In the broad spectrum of the evolution of human cultural systems over the past 15,000 years, there has been a general global trend toward increasing social complexity (Service 1962; Peregrine 2001; Haas 2001a). Highly successful and relatively simple hunting and gathering groups of family bands have dominated human history. As population gradually increased and the diverse niches of the world filled in with equally diverse cultural groups, at least some cultures changed and became more complex in different areas as people adapted to environmental, demographic, and social pressures. In six separate parts of the world—what we would call "crucibles of civilization"—this process of increasing complexity led to the endogenous emergence of distinct civilizations—Mesopotamia, Egypt, India, China, Mesoamerica, and the Andes. Although they follow the same general pattern, each of the six early civilizations is distinct and has its own history and trajectory of evolutionary change. Returning briefly to our musical analogy, the six different world areas could be looked at as somewhat analogous to the bodies of work of six different composers. Each produced similar kinds of music (solos, chamber pieces, symphonies, and operas), but they are all unique. Similarly, the civilizations of the six world areas underwent similar processes of change and eventually converged on similar levels of cultural complexity, but their paths and histories were unique.

The general pattern of increasing cultural complexity starts with a common foundation in nomadic hunting and gathering bands exploiting a wide range of resources. Under certain cultural and material conditions this relatively simple cultural pattern is followed by a cultural transformation stimulated by the origins and spread of agriculture. (Agriculture of course is not an inevitable outgrowth of hunting and gathering any more than a symphony is an inevitable outgrowth of a chamber piece.) With few exceptions, agriculture leads to new economic and social formations and the appearance of settled villages. Similar patterns of reduced mobility and village formation also occur with increased dependence on stable resources—herd animals, marine resources, and a wealth of gatherable resources. Societies with settled agricultural villages are structurally more complex than hunting and gathering societies in having more people playing a wider range of roles. A further step in the evolution of cultural complexity is the layering of hierarchical and/or heterarchical forms of leadership and centralized decision making (Service 1962; Sahlin and Service 1960; Fried 1967; Cronley 1995; Cremer 2001). In response to continuing and new pressures, a small number of world areas, the six crucibles of early civilization, subsequently displayed further layering with the emergence of social stratification, marked political hierarchies, centralized and organized religion, labor specialization, urban centers, and vast public works projects.

The Norte Chico Late Archaic

Despite general agreement that one of the world's first pristine civilizations developed in the Andean region of Peru, there is less agreement about when and how this evolutionary transformation took place. Research in the past 10–15 years has more precisely identified the first area to undergo this historic transition (Shady and Leyva 2003; Shady, Haas, and Cremer 2001; Haas, Cremer, and Ruiz 2004). What appears to be the locale of the initial transition from simple to highly complex social organization is a stretch of the Peruvian coast just south of what is commonly called the North Coast and just north of what is commonly called the Central Coast, an area locally referred to as the Norte Chico. Research in the Norte Chico has shown that this region was the focus of a major cultural florescence during the Late Archaic period, 3000 to 1800 BC. More than 30 large sites from this time period have been found with significant monumental architecture and extensive residential architecture (fig. 1) (Kosok 1965; Williams and Merino 1979; Engel 1987; Vega-Centeno et al. 1998; Shady et al. 2003 [2000]; Haas, Cremer, and Ruiz 2004). Radiocarbon dates from 18 of these sites (table 1) confirm their Late Archaic date and establish that the area was occupied continuously and intensively for at least 1,200 years (Feldman 1980; Zecheiner 1988; Shady, Haas, and Cremer 2001; Haas, Cremer, and Ruiz 2004).

The Norte Chico region has been the focus of theoretical writings concerning the nature and causes of the emergence and development of complex polities in the third millennium BC. Moseley (1975, 1985, 1992, 2001, n.d.) stimulated considerable interest in this period with his presentation of the
Figure 1. The Norte Chico, showing locations of Late Archaic sites and modern towns.

theory of the maritime foundations of Andean civilization (see Osborn 1977; Wilson 1981; Raymond 1981; Bonavia 1982, 1991, 1993–95; Quilter and Stocker 1983; Quilter 1992). The basic premise of the theory is that the organization of procurement and distribution of marine resources was central to the initial development of complex social and economic systems in the Andean region. Moseley has also argued that the incipient Andean civilization was unique in being based on a marine economy and not on agriculture and particularly cereal grains. It has long been known that there was a wide variety of domesticated plants in early coastal sites (see Quilter 1991), but it has generally been assumed that these were of secondary importance and grown in floodplain lands at the mouth of rivers. As more information has become available about the occupation of the coast, the theory has evolved to incorporate a stronger role for agriculture, but the critical role of marine resources remains central to it (Moseley 1992, 2001, n.d.; Sandweiss and Moseley 2001).

The archetypal maritime site in Moseley’s model was Aspero, at the mouth of the Supe Valley (Moseley and Willey 1973; Moseley 1975, 2001). Aspero extends over approximately 15 hectares and has six communally constructed platform mounds. According to the figures provided by Moseley (1975, 86), the largest of these mounds is about 3,200 m² in

3. The earliest date of 4,900 ± 160 BP (3690 BC) has been judged too early (Feldman 1983, 77) but in light of other dates of a similar age from inland sites in the Norte Chico may need to be reconsidered.
Table 1. Date Ranges for Late Archaic Sites with Communal Architecture

<table>
<thead>
<tr>
<th>Site</th>
<th>Earliest Known Date</th>
<th>Latest Known Date</th>
<th>Valley</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salinas de Chao</td>
<td>3,280 ± 140 BP (1570 BC)</td>
<td>1,250 ± 90 BP (AD 790)</td>
<td>Chao</td>
<td>T. Pozorski and S. Pozorski (1990, 484)</td>
</tr>
<tr>
<td>El Paraíso</td>
<td>3,790 ± 100 BP (2230 BC)</td>
<td>3,020 ± 60 BP (1270 BC)</td>
<td>Chillón</td>
<td>Quilter (1985, 281)</td>
</tr>
<tr>
<td>Caballente</td>
<td>4,830 ± 70 BP (3600 BC)</td>
<td>2,580 ± 70 BP (680 BC)</td>
<td>Fortaleza</td>
<td>Haas et al. (2004)</td>
</tr>
<tr>
<td>Huaricanga</td>
<td>4,780 ± 50 BP (3570 BC)</td>
<td>2,580 ± 80 BP (670 BC)</td>
<td>Fortaleza</td>
<td>Haas et al. (2004)</td>
</tr>
<tr>
<td>Cerro Blanco 2</td>
<td>3,720 ± 90 BP (2120 BC)</td>
<td>3,390 ± 70 BP (1680 BC)</td>
<td>Fortaleza</td>
<td>Haas et al. (2004)</td>
</tr>
<tr>
<td>Shaura</td>
<td>3,660 ± 60 BP (2030 BC)</td>
<td>3,080 ± 70 BP (1330 BC)</td>
<td>Fortaleza</td>
<td>Haas et al. (2004)</td>
</tr>
<tr>
<td>Cerro Blanco 1</td>
<td>3,600 ± 70 BP (1950 BC)</td>
<td>2,950 ± 70 BP (1160 BC)</td>
<td>Fortaleza</td>
<td>Haas et al. (2004)</td>
</tr>
<tr>
<td>Cerro Lampay</td>
<td>4,540 ± 41 BP (3202 BC)</td>
<td>3,423 ± 40 BP (1658 BC)</td>
<td>Fortaleza</td>
<td>Vega-Centeno (2005)</td>
</tr>
<tr>
<td>Kotosh</td>
<td>2,040 ± 100 BP (60 BC)</td>
<td>1,350 ± 140 BP (AD 700)</td>
<td>Huanuco</td>
<td>Ravines (1982, 184), Izumi and Terada (1972)</td>
</tr>
<tr>
<td>Bandurria</td>
<td>4,530 ± 80 BP (3220 BC)</td>
<td>3,740 ± 100 BP (2150 BC)</td>
<td>Huaura</td>
<td>Fung (1988, 95)</td>
</tr>
<tr>
<td>Punta y Suela</td>
<td>9,750 ± 110 BP (9170 BC)</td>
<td>2,430 ± 70 BP (560 BC)</td>
<td>Pativilca</td>
<td>Haas et al. (2004)</td>
</tr>
<tr>
<td>Upaca</td>
<td>4,180 ± 110 BP (2740 BC)</td>
<td>2,160 ± 70 BP (210 BC)</td>
<td>Pativilca</td>
<td>Haas et al. (2004)</td>
</tr>
<tr>
<td>Vinto Alto</td>
<td>4,040 ± 70 BP (2580 BC)</td>
<td>3,700 ± 110 BP (2100 BC)</td>
<td>Pativilca</td>
<td>Haas et al. (2004)</td>
</tr>
<tr>
<td>Huayto</td>
<td>3,820 ± 70 BP (2270 BC)</td>
<td>3,800 ± 70 BP (2240 BC)</td>
<td>Pativilca</td>
<td>Haas et al. (2004)</td>
</tr>
<tr>
<td>Carretera</td>
<td>3,760 ± 70 BP (2230 BC)</td>
<td>3,540 ± 70 BP (1870 BC)</td>
<td>Pativilca</td>
<td>Haas et al. (2004)</td>
</tr>
<tr>
<td>Pampa San José</td>
<td>3,790 ± 60 BP (2230 BC)</td>
<td>3,540 ± 70 BP (1870 BC)</td>
<td>Pativilca</td>
<td>Haas et al. (2004)</td>
</tr>
<tr>
<td>Potao</td>
<td>3,215 ± 35 BP (1480 BC)</td>
<td>3,950 ± 150 BP (2450 BC)</td>
<td>Pativilca</td>
<td>Supe (1983, 177)</td>
</tr>
<tr>
<td>Lurihuasi</td>
<td>4,060 ± 140 BP (2610 BC)</td>
<td>–</td>
<td>Supe</td>
<td>Zechenter (1988, 519)</td>
</tr>
<tr>
<td>Allpacoto</td>
<td>3,740 ± 125 BP (2150 BC)</td>
<td>3,740 ± 125 BP (2150 BC)</td>
<td>Supe</td>
<td>Zechenter (1988, 519)</td>
</tr>
<tr>
<td>Piedra Parada</td>
<td>3,430 ± 80 BP (1740 BC)</td>
<td>–</td>
<td>Supe</td>
<td>Zechenter (1988, 519)</td>
</tr>
<tr>
<td>La Galgada</td>
<td>4,110 ± 50 BP (2690 BC)</td>
<td>3,130 ± 80 BP (1390 BC)</td>
<td>Tablachaca</td>
<td>Grieder et al. (1988, 69)</td>
</tr>
</tbody>
</table>

volume. Recognizing the presence of such monuments at an early site was a significant first step in identifying the Norte Chico as the location of an early, preceramic cultural development on the coast of Peru. Excavations by Feldman, one of Moseley's students, confirmed the central importance of maritime food resources at Aspero and demonstrated the mounds' cultural origin (Feldman 1980, 1983). Feldman obtained seven radiocarbon dates from Aspero, ranging from 3500 to 2500 BC.³

The picture of the Norte Chico began to change in the late 1980s with the work of Engel in the Supe and Pativilca Valleys. Engel (1988) identified a number of sites with large-scale architecture in inland locations. He correctly inferred from the form of these sites and the lack of surface ceramics that they dated to the Cotton Preceramic Era or what is referred to here as the Late Archaic. Zechenter (1988) was the first to generate radiocarbon dates from any of these inland sites, and she showed that three of the inland sites in the Supe Valley dated to the third millennium BC. Shady's work at the site of Caral (elsewhere called Chupacigarro Grande [Kosok 1965,
Engel 1988]) provided a clearer picture of this inland occupation. Shady (Shady, Haas, and Creamer 2001) published dates supporting Zechenter’s earlier findings and establishing that Caral was occupied throughout much of the third millennium BC. She also demonstrated that the large public architecture at these sites was ceremonial in nature and maintained that some of the constructions represented socially stratified residential architecture (Shady 1997, 2003a, 2003b [1999], 2003c [2000], 2003d, 2003e, Shady and Leyva 2003).

Cerro Lampay in the Fortaleza Valley, excavated by Vega-Centeno (2005), is the best-dated site in the Norte Chico, with 27 published dates. Twenty-five of these dates are in a continuous sequence from 3,734 ± 38 BP (2066 BC) to 3,984 ± 49 BP (2411 BC). Two solitary dates of 3,423 ± 40 BP (1658 BC) and 4,540 ± 41 BP (3202 BC) fall well outside the range of the other 25 dates. The dated samples come from a full range of construction and occupation activities at the site and demonstrate the longevity of individual sites in the region.

Completing and expanding on the earlier work done in the area, the Proyecto Arqueológico Norte Chico tested sites in the valleys north of Supe: Pativilca and Fortaleza. This testing has yielded 125 radiocarbon dates for 13 sites in these valleys (Haas, Creamer, and Ruiz 2004; Haas and Creamer 2005) and establishes that 12 of them were occupied from at least 3100 to 1800 BC. (These samples come from diverse contexts, including residential trash, floors, wall plaster, and shicra bags used for construction.) There are at least six additional undated sites in the Pativilca and Fortaleza Valleys and five additional undated sites in the Supe Valley (Williams and Merino 1979; Shady et al. 2003 [2000]) with hallmark Late Archaic characteristics (large platform mounds and an absence of surface ceramics). Recent survey in the Huaura Valley has identified six more probable Late Archaic centers (Nelson and Ruiz 2005). Some dates for inland sites, taken from secure occupational and construction contexts, extend back prior to 3500, but these appear to be isolated and cannot yet be considered reliable indicators of an even earlier cultural florescence. There are also a number of dates after 1800 BC, generally associated with ceramics, which indicate that the valleys and some of the Late Archaic sites continued to be occupied into the succeeding Initial period (1800–1200 BC).

These recent dates confirm that construction and occupation of the inland sites was contemporaneous with the occupation and construction of large early coastal sites in the Norte Chico region—Aspero (Feldman 1980), Bandurria (Engel 1957; Wendt 1964; Fung 1988), and Bermejo (Silva 1978)—and in other areas, for example, Huaca Prieta (Bird 1948, 1985). Unfortunately, the large-scale destruction of a number of inland sites in the Norte Chico has effectively made it impossible to establish with any scientific certainty whether the coastal sites or the inland sites emerged first. The site of Upaca, for example, is the current location of an electrical power plant, and the entire central portion of the site is gone. Punta y Suela, the Pativilca site with the earliest dates in the Norte Chico, has been largely leveled and plowed under by modern agricultural activities. The site of Shaura in the Fortaleza Valley was used for gravel mining in the construction of the modern road and is almost completely demolished today. Considering the heavily impacted nature of the remnant settlement pattern (Dewar and McBride 1992), it is likely that the chicken-or-egg question will never be answered empirically. However, what is already quite clear from the available evidence is that Late Archaic coastal and inland developments in the Norte Chico went hand in hand and cannot be separated from one another. It is also clear that the Norte Chico Late Archaic represents a unique cultural development. On a comparative basis, the concentration of large sites with both ceremonial and residential functions looks like a cross between Chaco Canyon in the U.S. Southwest and the multiple Mayan polities in Mesoamerica. In all three of these areas there are many large, relatively independent sites concentrated in a relatively small region. The Chaco system (Crown and Judge 1991; Vivian 1990; Sebastian 1992; Lekson 1999) is much smaller than the Norte Chico in scale, while the Maya system (Culbert 1991; Sabloff and Henderson 1993; Masson and Freidel 2002) is much larger. Remnants of this general pattern of clustered contemporary sites continue into the Initial period in the Norte Chico region and in the Casma Valley to the north (S. Pozorski and T. Pozorski 1986, 1987, 1990, 1992; T. Pozorski and S. Pozorski 2000) and the Lurin Valley to the south (Burger 1995; Burger and Salazar-Burger 1991).

In all of these areas, there are multiple large ceremonial and residential centers in relatively close proximity, all occupied at roughly the same time.

Norte Chico Chiefdoms and States

Throughout the 1980s, Feldman (1980, 1987) made a cogent argument that Aspero represented the center of a chiefdom-type of organization. This argument was based largely on consideration of Aspero alone. Feldman mentioned the existence of numerous inland sites with circular plazas but did not have data at the time to place them in chronological perspective. In light of new chronological data and Shady’s excavations at Caral, Feldman’s Aspero-centered chiefdom model is no longer viable. The communal architecture at Aspero is significantly smaller than that found at the inland sites. The high-status residential architecture evident at a number of the inland sites is noticeably absent at Aspero. Indeed, it is difficult to apply a chiefdom-type model to the Norte Chico as a whole, given what we now know about the intense Late Archaic occupation. The concept of a chiefdom implies some kind of centralized polity with a chief and/or chiefly lineage serving as decision maker, adjudicator, organizer, and leader, but the settlement pattern in the Norte Chico gives no indication of a centralized polity. The numerous large sites all appear to be relatively independent of each other. There is no clear site-size hierarchy, and high-status residential architecture is identifiable at all of the sites that have not been
heavily disturbed. No site stands out as the social, political, or religious “center” of a chiefdom. The density of sites found in the Norte Chico region is also unlike that of any known chiefdom society. The valleys of Supe, Pativilca, and Fortaleza cover an area of only 1,800 km², and within that area there are more than 30 large sites, all with monumental architecture and all occupied in the Late Archaic. These sites range from 1 to 10 km apart, with no smaller sites in the intervening areas. The communal architecture at these sites includes multiple constructed mounds over 50,000 m³ in volume (table 2; see also Shady et al. 2003 [2001]), exceeding that of the individual and collective communal architectural remains found in ethnographically or historically known chiefdoms in Polynesia, Africa, the Caribbean, and elsewhere (see, e.g., Evans-Pritchard 1940; Sahlin 1958; Service 1962; Goldman 1970; Peebles and Kus 1977; Mair 1977; Renfrew and Shannon 1982; Kirch 1984, 1986; Creamer and Haas 1985; Drennan and Uribe 1987; Morgan 1988; Trigger 1990; Anderson 1994; Pauketat 1994; Earle 1991, 1997; Kolb 1994; Redmond 1998; Ames and Maschner 1999; Arnold 2001).

The other nonchiefdom-like feature of the Norte Chico system is the absence of any signs of warfare. Warfare tends to be ubiquitous in chiefdom societies (Redmond 1994; Earle 1997; Carneiro 2000), and there is no indication of conflict between sites or between valleys. All of the sites are situated in distinctly nondefensive locations and lack defensive walls or any of the other distinctive hallmarks of warfare and physical conflict (Keeley 1996; LeBlanc 1999, 2003; Haas 2001b). Given the absence of warfare, the uniqueness of the settlement pattern, and the magnitude of monumental architecture, a chiefdom model of political and economic organization does not appear to be a useful heuristic device for understanding the organization of the Norte Chico system.

Shady (2003a, 94–97; 2003d), in turn, has stated that Caral was the capital of what she calls the Caral-Supe or Supe-Peru “pristine state” (cf. Fried 1967; Haas 1982). She provides the following definition of a state: “We identify a political entity as a state when the society—which produces an economic surplus and whose members are organized in social strata of differing status and, on the basis of that varied status, participate differently in the benefits of the productive process—is directed by permanent authorities with coercive power to uphold their decisions” (Shady 2003a, 93–94, our translation). Using this definition, she states that Caral was the seat of government for a Supe Valley state, the “oldest settlement of state-level society formed in the area and the most outstanding expression of the first civilization in the Central Andes” (Shady 2003a, 96, our translation).

Shady subsequently expands the scope of the Caral-Supe state (2003c [2000], 109–10, our translation):

Between 2100 and 1600 BC, the establishment of Caral became one of the outstanding expressions of urbanism of the epoch. Not only was its political hegemony felt in the immediate surroundings, the Supe and Pativilca Valleys, and in Barranca and Huaura, but it can be inferred from the distribution of the distinctive architectural pattern—the pyramid and the sunken circular plaza—that its prestige extended from the Chao Valley on the north to the Chillón on the south, as can be seen in the sites at Salinas de Chao and El Paraíso, respectively. The name of the Supe Valley must come from that era, which tradition has maintained as a sacred place of respect and veneration, and this must be the period in which, for the first time, a “pre-

Table 2. Mound Volumes (m³) for Sites in the Pativilca and Fortaleza Valleys

<table>
<thead>
<tr>
<th>Site</th>
<th>Main Mound</th>
<th>Mound B</th>
<th>Mound C</th>
<th>Mound D</th>
<th>Mound E</th>
<th>Mound F</th>
<th>Mound G</th>
<th>Mound H</th>
<th>Mound I</th>
<th>Total Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caballete</td>
<td>46,824</td>
<td>7,119</td>
<td>1,217</td>
<td>7,265</td>
<td>1,489</td>
<td>7,952</td>
<td></td>
<td></td>
<td></td>
<td>71,866</td>
</tr>
<tr>
<td>Huaricanga</td>
<td>56,536</td>
<td>1,878</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>58,414</td>
</tr>
<tr>
<td>Vinto Alto</td>
<td>107,800</td>
<td>79,379</td>
<td>10,113</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>197,292</td>
</tr>
<tr>
<td>Porvenir</td>
<td>13,222</td>
<td>4,285</td>
<td>1,462</td>
<td>4,362</td>
<td>5,664</td>
<td>5,655</td>
<td>518</td>
<td>1,975</td>
<td>583</td>
<td>37,724</td>
</tr>
<tr>
<td>Shaura</td>
<td>10,205</td>
<td></td>
<td></td>
<td></td>
<td>996</td>
<td>513</td>
<td>4,153</td>
<td></td>
<td></td>
<td>10,205</td>
</tr>
<tr>
<td>Punta y Suela</td>
<td>15,898</td>
<td>336</td>
<td>379</td>
<td>809</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>23,082</td>
</tr>
<tr>
<td>Upaca</td>
<td>26,673</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>26,673</td>
</tr>
<tr>
<td>Carretaria</td>
<td>25,374</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>25,374</td>
</tr>
<tr>
<td>Huayto</td>
<td>14,362</td>
<td>15,316</td>
<td>18,803</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>48,480</td>
</tr>
</tbody>
</table>

Note: Calculations of mound volumes were made by Keith Carlson on the basis of topographic maps derived from extensive total-station data.
Quechua” language would have begun its expansion, connected with this first “interregional integration.”

In a later publication, Shady (2003d, 331) adds the Fortaleza Valley specifically as falling under the centralized government of the Caral-Supe state.

Shady does not place her discussion of the Caral-Supe state in the context of the broader body of literature on the evolution of the state in Peru or elsewhere. Her definition of a state would include a wide range of chiefdom-type societies found around the world, such as those of precontact Hawaii and other societies in the Pacific, various historic Caribbean polities, and many African chiefdoms (Steward 1948; Steward and Faron 1959; Sahlin 1958; Service 1962; Goldman 1970; Peebles and Kus 1977; Mair 1977; Renfrew and Shennan 1982; Kirch 1984, 1986; Creamer and Haas 1985; Drennan and Uribe 1987; Morgan 1988; Trigger 1990; Rouse 1992; Anderson 1994; Pauketat 1994; Earle 1991, 1997; Kolb 1994; Redmond 1998; Wilson 1998; Ames and Maschner 1999). Even if this definition is accepted, there are few data to support the assertion of Caral statehood and regional hegemony. There is physical evidence of some form of social stratification at Caral and other sites in the Norte Chico in their distinctive kinds of residential architecture (Shady 2003b, 2003c, Shady and Lopez 2000 [1999]; Noel 2003). Some residences are built of formally constructed plastered stone walls with carefully prepared floors, while others are much more irregular, with a mix of mud, stone, and cane walls. There are also signs of more ephemeral residences built of wattle and daub. The presence of this kind of residential stratification, however, does not fully address how the upper social strata may have been benefiting from differential access to basic or sumptuary resources. Although there are general descriptions of the food resources consumed at Caral, these are never broken down by residential unit. Nor is there any discussion of possible differences in the types of artifacts found in different residential settings. There is also no indication of differentially distributed sumptuary goods, such as elaborate jewelry, clothing, or exotic trade materials. Indeed, sumptuary goods—mostly stone and shell beads and possibly textiles (Shady 2004)—are extremely rare. Any discussion of the exercise of coercive power by a power-holding elite at Caral is also absent, and no empirical evidence has been presented for political, economic, military, or religious dominance or “hegemony” over the other sites in the Supe Valley or the other valleys in the Norte Chico. Shady’s own analyses of architecture and site size would seem to argue against both a centralized state-type of organization and a politically dominant role for Caral even within the Supe Valley. Her calculations (Shady et al. 2003 [2000]; Shady 2004, 62, 65) of site size and monumental construction, based on aerial photographs, show that Caral is not the biggest site in the Supe Valley and does not have the largest volume of monumental construction.

Work in the Pativilca and Fortaleza Valleys shows that Caral and the other large Late Archaic sites in the Supe Valley (Pueblo Nuevo, Miraya, Peñico, Era de Pando, Lurihuasi, Huacache, and Allpacoto [Shady et al. 2003]) are also not larger in size or communal architecture than their neighbors in the adjacent valleys beyond Supe. Sites such as Vinto Alto, Pampa San José, Punta y Suela, and Huayto in the Pativilca Valley and Porvenir, Caballito, Cerro de la Cruz, Huaricanga, and Shaura in the Fortaleza Valley all have communal structures similar in size to those found in the Supe Valley.

Caral, with published dates of 2600-2020 BC (Shady, Haas, and Creamer 2001), is also not the earliest site in the region. There are earlier published dates between 2650 and 3100 BC for Upaca and Punta y Suela in the Pativilca Valley and Porvenir, Caballito, and Huaricanga in the Fortaleza Valley (Haas, Creamer, and Ruiz 2004). While Shady argues for the regional dominance of Caral between 2100 and 1600 BC, only one of the published radiocarbon dates for the site (2020 BC) comes from this time period. Looking further at architecture, Caral, with six platform mounds (Shady 1997), does not have the most or the largest platform mounds in the region. Miraya and Lurihuasi in the Supe Valley have between six and ten mounds (depending on how they are counted [Shady et al. 2003 [2000], figs. 18 and 23]). Porvenir in the Fortaleza Valley also has six (Haas and Ruiz 2003). Nor does Caral, with two sunken circular plazas (Shady 1997), have more of these distinctive ceremonial structures. Upaca and Punta y Suela in the Pativilca Valley each have two (Haas and Ruiz 2003), as does Porvenir in the Fortaleza Valley (Haas and Ruiz 2004). The Fortaleza Valley site of Caballito has at least three circular plazas and possibly a fourth. Clearly Caral is a large and important site, but there is simply no physical evidence supporting the notion that it is somehow the capital of a state-level polity centered in the Supe Valley.

Complexity and the Norte Chico Late Archaic

As mentioned above, cultural systems in Peru underwent a major transformation (Haas 2001a) during the period from about 3100 to 1800 BC. Prior to 3100 BC the entire Peruvian landscape, as well as the landscapes of the rest of the Americas, consisted entirely of small groups of people largely dependent on hunting and gathering (Haas and Creamer 2004). While an array of domesticated plants appeared during this time period (Piperno 1990; McClung 1992; Pearsall 1992; Piperno and Pearsall 1998), it did not result in dramatic changes in settlement or lifestyle. The cultural complexity manifested at this point was relatively limited, with few actors and roles in any given community. There were minor appearances of somewhat greater complexity at places such as Nan Choc in the Zaña Valley (Dillehay, Netherly, and Rossen 1989; Dillehay, Rossen, and Netherly 1997) and Real Alto in Ecuador (Lathrap, Marcos, and Zeidler 1977), where small-scale communal structures indicated the presence of ephemeral leadership. However, these experiments with greater social complexity—cultural tinkering (the nonrandom generation of variable so-
utions to problems [Haas 2001a]—appear to have been episodic and did not lead to evolutionary change over the long term.

Moseley’s maritime theory of Andean civilization provides a starting point for critical analysis of the development of this more complex cultural system at the beginning of the third millennium BC. Moseley argues that marine resources played a central role in the diet of coastal populations during the period from 3000 to 1800 BC and that effective exploitation of these resources stimulated the development of increasing cultural complexity, centralized decision making, and resulting monument construction. Two elements of this theory need to be examined in the light of the new data.

First, there is the question of the significance of communal architecture at maritime sites up and down the coast. The type-site of Aspero, with its small mounds, is one of the very few sites in the littoral zone with any kind of communal architecture. Within the Norte Chico, there are three sites with such constructions: Bandurria (Fung 1988, 2004), on the south side of the Huaura Valley, Aspero, at the mouth of the Supe Valley, and Bermejo, just north of the Fortaleza Valley (Silva 1978). Outside the Norte Chico, there is relatively small-scale Late Archaic architecture at Las Haldas (Matuzawawa 1978; S. Pozorski and T. Pozorski 1987; Fung 1988) in the Casma Valley and at least some small-scale communal architecture at Huaca Prieta (Bird 1985). Most coastal sites occupied in the Late Archaic, such as Asia, Salinas de Chao, Alto Salaverry, Kilometer 4, and Huaynuná, have very small-scale (less than 1,000 m²) if any communal architecture (Engel 1963; Lanning 1963; Patterson and Moseley 1968; S. Pozorski and T. Pozorski 1979; Alva 1986; T. Pozorski and S. Pozorski 1990; Wise 1997, 2000; Wise, Clark, and Williams 1994). The site of El Paraíso might appear to be an exception to this general pattern (see Moseley 1975); however, although it does have very-large-scale communal architecture, it is several kilometers from the littoral zone and lacks the large middens of shell and marine resources that characterize the other sites in that zone (Engel 1967; Quilter 1985; Quilter et al. 1991). El Paraíso, with radiocarbon dates at the very end of the Late Archaic (2230–1270 BC) (Quilter 1985), fits the pattern of an isolated inland site similar to La Galgada (Grieder et al. 1988). Overall, communal architecture at littoral sites is more the exception than the rule. What large-scale communal architecture there is at littoral sites is mostly concentrated in the Norte Chico, where the large inland sites are also concentrated. When the monumental architecture of the inland sites is compared with the communal architecture found at littoral sites, again the differences are of a full order of magnitude. For example, the largest mound at Aspero is approximately 3,200 m³ in volume, while the main mound at Huarcangas is approximately 56,000 m³ and one of the three main mounds at Vinto Alto is approximately 79,000 m³.7

Two conclusions can be drawn from these data:

1. The development of early cultural complexity is focused in the Norte Chico and not widespread elsewhere on the Peruvian coast. If exploitation of maritime resources was the engine behind the development of complex political systems, there should have been examples up and down the coast.

2. From the very start of the cultural transformation at the beginning of the third millennium, the centers of power in the Norte Chico are to be found at the inland sites. All of the truly monumental architecture is inland, as are the majority of ceremonial structures and residential architecture. Judging from the available picture of site occupation in the Norte Chico, the coastal sites were secondary elements of the overall political system. In terms of the history of archaeology in Peru, it seems that the maritime sites have been assigned unwarranted cultural importance because they have been better-known for much longer than the inland sites.

The second critical element of the maritime theory is the central economic importance of marine resources. Moseley argues the early emergence of complex polities on the Peruvian coast takes place in the absence of large-scale agriculture and emphasizes the uniqueness of this development in the absence of exploitation of cereal grains (Moseley 1975, n.d.). Instead of agricultural production alone, in the later iterations of the theory it is the exploitation of diverse marine resources coupled with small-scale agriculture that led to the emergence of leadership and centralized decision making. However, more recent work at inland sites calls into question the centrality of the exploitation of marine resources as a driving force for the emergence of political complexity in the Norte Chico.

Shady’s excavations at Caral (Béarez and Miranda 2003; Shady and Leyva 2003) and the sites tested by the Proyecto Arqueológico Norte Chico confirm that marine resources are indeed an important constituent of middens at all the sites, even those farthest inland. In every sample from every test pit analyzed by the project to date there are fish bones and marine invertebrates. Anchovies and sardines are well represented, as are clams and mussels. However, at the inland sites these marine products are only part of a diet rich in domesticated plant products, including corn. The quantity of marine resources found in the trash at the inland sites is but a small fraction of the volumes of shellfish and fish remains found in dense deposits at Aspero and the other coastal sites (e.g., Feldman 1980; Silva 1978; Engel 1963; Bird 1948). A wide range of plant foods is present in the samples, with a liberal mix of beans, pacay, avocado, lucuma, chile, squash, guava, and achira. Analysis of pollen from samples drawn from test pits in sites in the Pativilca and Fortaleza Valleys

plazas that may date to the Late Archaic. Silva (1978) tested trash deposits at this site that yielded radiocarbon Initial-period radiocarbon dates, but there were ceramic deposits underneath the ceramic-bearing Initial-period deposits. Therefore it is possible that Bermejo may have a Late Archaic occupation with communal architecture.

7. Recent survey by Jesús Holguín of San Marcos University at the site of Bermejo has revealed that this site has large mounds and circular
has identified corn (*Zea mays*) pollen in 17 of 28 samples (Huaman et al. 2005). Corn has also been reported at Caral (Shady 2003c [2000]) and Aspero (Willey and Corbett 1954), though the contexts at these sites remain unclear. (Macrobotanical remains of corn—kernels, cobs, etc.—are quite scarce in the deposits in which corn pollen is present. Starch grain and phytolith analyses are ongoing.) While the arguments about the relative importance of corn in the Late Archaic are by no means resolved, it now seems evident that corn was a component of the diet of the Norte Chico people in the third millennium BC (see also Bonavia and Grobman 1989a, 1989b, 2000). The available evidence simply does not support the conclusion that marine resources were the dominant component of inland subsistence during the Late Archaic.

Overall, the maritime theory is no longer tenable (see also Wilson 1981; Raymond 1981; Osborn 1977; Bonavia 1982, 1991, 1993–95; Quilter 1992; Quilter and Stocker 1983). At the same time, there is no question that marine resources played an important role in the politics and economics of the Late Archaic period and that the theory itself played a pioneering role in fostering a regional perspective on early cultural development along the entire Peruvian coast. Continuing to look comprehensively at the long coastal plain of Peru in the light of the available data leads to a number of observations concerning the cultural occupation during the third millennium BC:

1. The Norte Chico is distinct historically and processually. Although there are individual Late Archaic sites outside the region, such as La Galgada (Grieder et al. 1988) and El Paraíso (Engel 1966; Quilter 1985, 1991), with comparable monumental architecture, these sites are isolated and have date ranges that fall toward the end of the Late Archaic rather than the beginning. The concentration of more than 30 sites with monumental architecture and a continuous range of dates between 3100 and 1800 BC—the entire span of the Late Archaic—is a unique feature of the Peruvian landscape.

2. Within the Norte Chico, the Late Archaic occupation is not identifiably centralized in any given site or any given valley. Comparing site sizes and the respective volumes of communal structures at the different sites provides a relatively continuous curve from small to large across the region. Despite this, the Norte Chico does constitute a dominant center of both power and productivity along the Peruvian coastal plain at this time.

3. The effective exploitation of marine resources up and down the Peruvian coastal plain is inextricably related to the production of cotton at the inland sites, and all the known inland sites are in the Norte Chico region. The Late Archaic littoral sites excavated to date have a number of traits in common: cotton textiles and nets, exploitation of abundant populations of anchovies and sardines, which can only be effectively harvested with nets, and a variety of domesticated plant resources (e.g., beans, pacay, avocado, lucuma, chile, squash, guava, and achira) (see, e.g., Engel 1963; Bird 1985; Quilter et al. 1991).

4. The inland sites in the Norte Chico also have traits in common: abundant anchovies and sardines, few or no fishing implements and nets (Shady 2003b [1999]), cotton and simple cotton textiles, and placement immediately adjacent to simple irrigation canals and easily irrigated arable lands (Shady and Leyva 2003; Haas and Ruiz 2003, 2004).

These patterns raise a number of questions: What is the source of all the cotton and domesticated plant products being used at maritime sites along the Peruvian coast? What is the source of the marine products found in large quantities at the inland sites in the Norte Chico? What is the population/labor base for the construction of the monumental architecture at the numerous inland sites in the Norte Chico? Shady and Moseley (Shady 2003c [2000]; Shady and Leyva 2003; Moseley n.d.; Mann 2005) are now proposing that there was some kind of direct trade of cotton for fish between Caral and Aspero. While this might address the questions on a micro level, it does not address the regional patterns. To address these regional questions in a more comprehensive way, it will be useful to look beyond the Norte Chico.

### An Alternative Working Hypothesis

There is really only one location where cotton and domesticated plants were being produced on a large scale: the inland sites in the Norte Chico. Surveys conducted in other valleys have not discovered significant inland Late Archaic residential sites (see Willey 1953; Wilson 1988; Proulx 1968; Billman 1999; Silverman 2002). Furthermore, the large majority of littoral sites are far from arable land, and what land is nearby tends to be highly saline. The inland sites in the Norte Chico are all adjacent to plots of arable land apparently watered by short, simple irrigation canals. The evidence for canals at this point is indirect. First, Dillehay, Eling, and Rossen (2005) have demonstrated the presence of Middle Archaic irrigation canals in the upper Zaña Valley on the North Coast, showing that irrigation technology was present on the coast by at least 3400 BC and possibly as early as 4700 BC. Second, there is a direct correlation between the Late Archaic sites in the Norte Chico and small, simple contemporary canals. The sites are consistently located on dry desert terraces just above the floodplain. At the base of these terraces and effectively bounding one side of each of the sites is a functioning contemporary canal. These canals, all relatively short and coming straight off the river, provide water for extensive plots of arable land immediately adjacent to the sites. The scarcity of nets and other fishing apparatus at inland sites (see Shady and Leyva 2003) indicates that the residents were not doing their own maritime harvesting but getting their marine resources from fishermen living right on the coast. Only by combining the total output of numerous coastal villages could the quantity of marine resources consumed at these inland economic and ceremonial centers have been obtained.

The answer to the question of who was providing the labor for the numerous large-scale platform mounds and related
structures at the inland sites may also involve including the fishing communities in a regional system of labor and ceremonialism. Although the inland sites are quite large, comparatively little of the total area is taken up by permanent residential architecture. Shady and Lopez (2000 [1999]) report, for example, that areas of residential architecture at Caral make up less than 5% of the site area. Caballete, a site with major monumental architecture in the Fortaleza Valley, has perhaps the largest area given over to residential architecture, and even here it amounts to only 20% of the site (Haas and Ruiz 2004). There are no archaeological remains of permanent residential architecture capable of housing more than a few hundred people at any of the Late Archaic sites. Given what appear to have been relatively small resident populations at the inland sites, where was the labor to build all the monumental architecture coming from? The string of sites along the coast would have provided an alternative source of labor for these large-scale construction projects.

"Looked at locally, the Late Archaic of the Peruvian coast is an enigma. Viewed from a regional perspective, however, the enigma resolves itself into an understandable pattern of economic, political, and ideological interaction and centralization. A number of commonalities bind together a broad expanse of sites along the coastal plain. These commonalities include similar cotton textiles (Moseley and Barrett 1969; Gayton 1967; Moseley 1975; Bird 1985; Wendt 1964; Wise 2000), a combined maritime and domesticated-plant diet, and a religious system based on a U-shaped site layout, platform mounds, and sunken circular plazas centered in the Norte Chico (Haas and Creamer 2004; Haas, Creamer, and Ruiz 2005).

The emergence of this social, economic, and religious system begins at the start of the third millennium BC, when climate began to change and the traditional lomas environments were providing insufficient resources for the hunters and gatherers exploiting the coastal plain (Lanning 1967; see also Sandweiss et al. 1996). As people tinkered with changing resources and environment, they increasingly depended on the rich resources of the Pacific Ocean. These resources provided a diet rich in protein but deficient in the carbohydrates, starches, and nutrients provided by plant foods. In one particular zone, the Norte Chico, some local residents began growing their own plant foods, adopting a simple system of irrigation to bring river water to arable land in a relatively small number of appropriate inland locations and employing plants already domesticated in other areas (see Pearsall 1992; Piperno 1990; Piperno and Pearsall 1998), including beans, squash, corn, and cotton. These inland innovators quickly established a new economic regime and became power-holders on a regional scale. Their power was based on control over the production of both cotton, critical for the effective exploitation of marine resources, and domesticated plant foodstuffs, critical for a balanced diet (Haas, Creamer, and Ruiz 2005). Their identity—whether individuals, families, or kin groups—is unclear, but it is reasonable to propose that they were occupying the higher-status residential complexes at the inland sites.

This economic power base was used to attract fishing communities through positive and negative sanctions (providing or withholding resources). The fact that there are so many inland sites would seem to indicate that there was competition among the different centers for participants and that size of mounds, ceremonial activities, and feasting were used as attractors. Residents of fishing villages would have come to the Norte Chico on some kind of seasonal basis, bringing dried fish in bulk. The dry season in July and August on the Peruvian coast is a lull time for both agriculturalists and fishing communities and would have been a propitious time for such gatherings. Once the people had come to the Norte Chico, they would have participated in ceremonial activities and monument building and eventually returned home with cotton and other domesticated plant resources. In this context, it is significant that many of the mounds were remodeled and resurfaced numerous times over many years. The evidence for this includes such patterns as five or more superimposed floors, multiple layers of different colors of plaster on a wall surface, and lower walls and other features entombed by later constructions. There are also indications that feasting may have been an integral part of seasonal ceremonialism and construction activities (Vega-Centeno 2005; see also Dietler and Hayden 2001; Bray 2003). The evidence for this is preliminary and consists of the widespread presence of communal cooking and eating remains directly associated with the building of monuments. There is a very widespread pattern of the incorporation of food remains and fire-altered rock from cooking pits into the construction of platform mounds. The fire-altered rock is scattered randomly in the building material and on the surface of almost every platform mound (approximately one rock per cubic meter of construction material). Furthermore, in the few cases where mound fill has been excavated, food remains are found in dense trash deposited as part of the mound construction.

This model is consistent with the currently available information about the coastal Late Archaic. It is offered here as a working hypothesis for explaining the dramatic transformation of culture witnessed on the Peruvian coast during the third millennium BC. It is not thoroughly confirmed by diverse data sets and still needs to be rigorously tested against new field data. This testing will entail a broad regional approach and detailed analyses of archaeological features, artifactual materials, and human, paleobotanical, and paleozoological remains. It will be important to quantify the percentage of marine and various domesticated plants in the diets of both inland and maritime sites and the amount of labor represented by the various construction phases of the communal architecture and to establish objective measures of the number of people living at individual sites and valleys at specific moments in time. Our perspective on the Late Archaic is very different today from that of only ten years ago, and if scholarly research is allowed to continue in the
area our understanding of this critical period in Andean history will continue to grow.

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Comments

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Haas and Creamer offer a compelling case for the importance of the Norte Chico region of Peru to the development of social and political complexity in the Andean world. The Norte Chico is unique in the Andes for its large number of early sites containing impressive monumental architecture. Although Moseley’s maritime hypothesis has been modified since its original publication, the data from the interior valleys of the Norte Chico appear to put to rest any argument for the temporal priority of complexity along the Pacific littoral proper, although at least one large coastal mound center requires further investigation. Haas and Creamer’s regional approach demonstrates that Caral, seen by Shady and her colleagues as the earliest Andean state, is neither early nor especially complex and that, while it was likely of local importance in the Supe Valley, none of the empirical data recovered from it are consistent with the existence of either an urban center, a coercive polity, or a state level of sociopolitical organization. Perhaps of greater importance, they show that no single mound complex in the Norte Chico region appears to have had political or economic salience compared with other mound sites.

The obvious challenge, then, is to explain the origins and developmental trajectory of this complexity. To that end, Haas and Creamer offer an “alternative working hypothesis.” Interior “innovators,” by using domesticated cotton required by coastal peoples for the fabrication of their fishing equipment, become “power brokers” capable of co-opting the labor of both coastal and valley peoples for the construction of mounds. (This argument assumes that it was impossible to grow cotton on the littoral.) Although this hypothesis has plausible elements, it rests upon a number of very implausible or as yet unsubstantiated assumptions and assertions and, in its present form, has limited theoretical justification.

I am not convinced that enough is known about the paleoenvironment of the Norte Chico to assert with confidence that the soils along the littoral were ill-suited to growing cotton. While I grant that the interior valleys are likely to have had a larger area of suitable soils, we should not dismiss the capacity of the littoral until it has been studied more systematically. Noeller (1993) notes that Holocene soil morphologies in the northern Peruvian desert lack significant salt accumulations and are enriched with eolian clays and silts. Whether this makes them good soils for cotton along the littoral remains to be determined, but it remains far from clear that the interior was able to develop an agricultural monopoly on cotton and other domesticates.

Likewise, I find the argument of “cultural tinkering” as the causal force behind plant domestication in the interior simplistic. No one doubts that innovators existed in the past, but the process of domestication must be considered within a context and not simply as a mechanical response to variation in environmental circumstances. Indeed, a strong appreciation of context tends to be lacking from this entire argument. Here the context is the longer-term process of sedentization and resource intensification that must have started far earlier in the Archaic but is essentially unknown in the Norte Chico and much of Peru’s central coast. Aside from a handful of middle-to-early Late Archaic sites like Paloma and sites much farther north in the Jequetepeque Valley, we know almost nothing about what preceded this Late Archaic extravaganza of mound building. To place the Norte Chico in context, we need directed studies of the foundations of subsistence practice and settlement dynamics before the Late Archaic.

The creation of an understanding of the deeper prehistory of the Norte Chico combined with the exploration of more sophisticated theories on the origins of persistent leadership will also go far toward improving the strongly centralized model that Haas and Creamer have developed. The existing data are strongly suggestive of a corporate rather than a network strategy (Blanton et al. 1996). I do like their emphasis on competitive display within a religious or ideological framework and have used a similar argument to explain the architectural changes at nearby but highland Late Archaic La Galgada (Aldenderfer 2005). If the hypothesis of agricultural monopoly on cotton by interior peoples is found to be lacking, however, some other basis for cooperation and competition
needs to be considered. I feel confident that the situation is more complex than “just” economic control.

Haas and Creamer are well aware of the shortcomings of the empirical record of the Norte Chico and, along with other archaeologists, are working hard to address them. But I hope that, along with that effort, they will initiate detailed paleoenvironmental studies of the Norte Chico and seek out other theoretical inspirations for explanations of their empirical findings.

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This paper helps to focus attention on a number of important issues regarding early complex societies in Peru. Haas and Creamer argue that the ceremonial centers of the Late Archaic period in the Norte Chico represent a major focus of power and productivity without any one center’s dominating the others. Believers in early cities and states in the Andes have envisioned these centers as built and occupied at roughly the same time. However, not enough stratigraphic and contextual information has been presented from most sites to determine whether the floors and construction phases of the majority of the edifices in them are contemporary or whether they are separate structures constructed at different times around a spatial template (e.g., plaza, sunken court) and represent the aggregation of sequential building and abandonment by multiple generations (Dillehay, Bonavia, and Kaulicke 2004). If the first scenario is the case, where are the elite residences and burial chambers, the domestic areas of the commoners, and the hierarchically structured corporate groups required to build and sustain these centers? The two scenarios represent different social and spatial configurations which may or may not correspond to early urbanism and state development. There is no doubt that the Norte Chico sites indicate transformations in the economic, political, and ideological organization of different communities. They also imply a level of organizational complexity and cultural sophistication beyond that of the communities which appeared before them in the middle Preceramic or Archaic period (uncalibrated 6,500–5,000 BP).

Examples of substantial Middle Archaic public architecture are known from El Paraíso, La Galgada, Huaricoto, and Kotosh. These sites are also seen as ceremonial centers without full-time resident populations. The major difference between these localities and the Norte Chico centers is probably the latter’s increased scale, continuity or duration, and formality of public activities and their expressions around formally designated plazas and the increased aggregation of new communities (cf. Dillehay 2004).

Another issue relates to the term “ceremonial center.” Just what are these so-called centers central to? If these are religious pilgrimage centers and foci for cotton and net production that are visited periodically by distant coastal populations, where are the residential sites of the inland people? Unfortunately, most archeological surveys in Peru have not located the domestic sites of the populations building and using the centers. One reason for this is that most archeologists working in Peru do not survey in the side canyons (i.e., lateral quebradas) between river valleys where many Middle-to-Late Archaic domestic sites are located. Our surveys in the Zana and Jequetepeque Valleys on the north coast of Peru have recorded more than 500 domestic sites of Archaic hunter-gatherers and incipient farmers living near springs and wetlands in vegetated habitats. From the Middle to the Late Archaic, a shift occurred from small scattered household sites located near water sources in distant side canyons to large sites situated on expansive alluvial fans directly adjacent to valley floors. My guess is that some visitors to the Norte Chico “centers” lived in distant side canyons. Most archeologists working in Peru could not identify these sites even if they walked over them because identifying them requires knowledge of lithic technology; domestic sites tend to consist of hearths, occasional hut remains, and numerous stone tool scatters. Finally, most Peruvian archaeology has focused on pyramids. Until intensive survey is done away from alluvial fans adjacent to valley floors, lithic technology is considered, and archeologists shift some interest from pyramids to households, these centers will not be understood. It is becoming increasingly evident that the domestic domain and the public behavior at ceremonial centers were spatially separate but socially complementary infrastructural aspects of Late Archaic societies that reinforced social integration while maintaining social boundaries.

With regard to the debate whether a maritime or an agricultural economy underwrote early Andean civilization, it is likely that, as more research takes place, we will discover the coexistence of different types of economic strategies on the coast and in the foothills and highlands (Dillehay, Bonavia, and Kaulicke 2004). Haas and Creamer link the rise of the Norte Chico centers to the unique importance of industrial crops such as cotton and gourds in the economy and view some maritime people as moving inland primarily for the ritual control of cotton and nets. If there was ritual control of these products, then it follows a pattern recorded in the upper middle Zana Valley, where early platform mounds at Cementerio de Nanchoc, dated ca. 6,000 BP, were associated with the ritual control of the production of lime for consumption with coca leaves.

Archeologists working in the Norte Chico area seem to be drawing conclusions on the basis of little excavated data. As more systematically recovered information becomes available, we will likely learn more about the shifting organization and relationships through time of the different mosaics of foragers, horticulturalists, agro-pastoralists, and pastoralists that in-
variably contributed at different times and in different places to the rise of Andean civilization.

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The results of a long-term project at Caral have produced a kind of paradigm shift in Central Andean archaeology, relocating the origin of social and cultural complexity from the site of Chavin to a restricted, still little researched coastal area flourishing some 1,000 to 2,000 years earlier. Complex traits at Chavin such as monumental ceremonial architecture and an elaborate art style have seemed to lack clearly discernible antecedents. While some (e.g., Tello, Lumberas) have argued that it represents the roots of Andean civilization with probable Amazonian antecedents, others have preferred the idea of a late synthesis of earlier coastal traits (e.g., Larco, Burger). Now Caral is perceived as a civilization boasting 5,000 years of cultural identity (Shady 2005) and being the most ancient in the Americas (Shady 2003d). Thus, finally, Andean civilization can be compared in age and complexity with the other ancient high civilizations of the world while retaining its uniqueness.

Much of this position is to be found in Haas and Creamer’s paper. They define the Norte Chico as the crucible of social complexity in the Andes, coming into existence during the astonishingly short time span of about 200 radiocarbon years and lasting (without major differentiation?) “at least 1,300 years.” Before 3100 BC there were only “ephemeral campsites and small fishing villages” with “relatively simple cultural systems.” Examples of major complexities in other areas, notably the Kotosh or Mito tradition, are dismissed as later outgrowths or isolated phenomena without major consequences. These statements are surprising and will not be accepted by many specialists in this field. In spite of the obviously erroneous “earliest” and “latest” dates shown in table 1, 14C dates from Kotosh (and related sites) exhibit significant overlap with those from the monumental sites in the Norte Chico area.

The fact that early monumental sites are more visible and numerous in the Supe and Fortaleza Valleys is related to their abandonment during Final Archaic times, whereas the Early Formative Casma complexes (Cerro Sechin and Sechin Bajo), for instance, often overlie substantial earlier architecture. Sites such as Caral have been considered to belong to the Formative Period, whereas the complexity of Aspero has gone unrecognized. The calculations used to “measure complexity” (site sizes and mound dimensions) are based on the sum of the building activities still visible today, with little if any direct documentation of the probably quite different earlier stages. Thus Haas and Creamer are not explaining a process from “simple” to “highly complex” but creating a kind of oppo-
sition that produces confusion about cause and effect. Plant domestication is earlier (in “noncomplex” and nonlocal populations), and complex architecture equally seems to be without antecedents (local creation?) in the Norte Chico area.

The central part of the paper is dedicated to the discussion of two models developed for the area, Moseley’s and Shady’s, followed by a presentation of an “alternative working hypothesis.” The authors reject the notion of chieftdoms at sites such as Aspero. They view the coastal sites as secondary centers dependent on and later than the more complex inland ones. Aspero, however, is early in the sequence and Bandurria even more so. Early complex littoral sites are not restricted to the Norte Chico area but, contra Haas and Creamer, “widespread elsewhere on the Peruvian coast” (e.g., Culebras and Huaro in the Casma area). Many of them are not simple fishing villages, and most of them have substantial numbers of burials whereas these are notoriously absent or rare at the inland sites. Haas and Creamer apparently think that the Norte Chico polities should be compared to a cross between Chaco Canyon and the Classic Maya (between chieftdom and state?).

Their working hypothesis is based on several problematic assumptions: (1) the impossibility of growing plants near the shore, (2) the cultivation of cotton inland to supply fishermen with nets, (3) large-scale construction and ceremonialism involving the coastal populations, and (4) climate change, leading to “tinkering” that in turn led to the transformation of the innovators into power holders through control of the labor of coastal populations. ... While the Norte Chico area is clearly of special importance for the understanding of early complexity and Shady’s long-term project at Caral has produced a tremendous amount of new data, complemented by those from other projects such as the one directed by Haas and Creamer, it is equally clear that generalizations like the one presented still lack sufficient empirical and theoretical support.

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The remarkable emergence of preceramic civilization on the Andean littoral desert was a highly complex process that demands carefully calibrated dating and detailed processual explanation. Haas and Creamer formulate a unique model to explain “the development of the first complex, centralized societies on the coast of Peru.” “Development” and “evolution” are terms associated with diachronic change. They are so used by Ruth Shady (1995, 1997, 1999a, b, 2000a, b [1999], 2004; Shady and Leyva 2003) in her pioneering modeling of Late Archaic civilization in the Rio Supe region. Recognizing the antiquity of maritime adaptations and their increasing dependency upon plants (cotton for line and net, wood for
craft and tackle, and gourds for floats and containers) during the Preclassic period, she has initiated new excavations at coastal Aspero to secure dates on the initial phases of monument construction. This fieldwork is designed to evaluate the hypothesis that horticulture and social complexity arose first in near-shore settings and subsequently advanced to inland valley settings where arable land was available. Presumably, the upstream progression of interior cultivation eventually reached a point where plant tending could not be logistically combined with marine exploitation because of travel time and scheduling conflicts between lunar tide and solar rainfall cycles. Fishing and farming then diverged as the separate but interdependent professions that form the economic keystone of Shady's scenario. Farming emphasized cotton and trees for wood and fruit but not staples, while fishing emphasized the netting of small schooling prey for protein and calories. Managerial elites arose to coordinate the specialized subsistence adaptations in these kin-based societies. Governance was in the name of the gods, and growing corporate authority led to the founding of monumental centers adjacent to scarce, patchy farmland farther and farther inland. Eventually, the numbers and sizes of centers required broad, regional mobilization of resources that Shady sees as state-level organization. Her evolutionary framework can be appreciated even if specific propositions are open to debate.

Ignoring both Shady's processual scenario and the accepted usage of "development," Haas and Creamer's premise is that it is "impossible to establish with any scientific certainty whether the coastal sites or the inland sites emerged first" and that "the chicken-or-egg question will never be answered empirically." Methodologically this results in a chicken-omelet. By turning a blind eye to chronology as well as to contrary evidence in the literature, Haas and Creamer combine the separate origins of littoral fishing and sierra farming to concoct a "coevolutionary" yeast for the rise of civilization. Their ahistorical methodology transforms complex evolutionary processes into singular events of biblical dimensions. This procedure leads to three conclusions, each masking multiple research issues requiring sensitive chronological controls: (1) the formation of archaic civilization "happened very quickly," (2) it then lay lifeless on the landscape for some 1,300 years, and (3) it evaporated as quickly as it appeared. Its seemingly sudden birth around 3000 BC is coincident with the general cessation of postglacial sea-level rise and the assumption by the near-shore fishery of its modern configuration, with shoreline sites no longer subject to inundation and rivers switching from aggrading depositional to erosional, downcutting regimes, lowering water table levels and diminishing the availability of easily farmed land. These dynamics prompted adaptive responses that certainly played into the rise of social complexity. In comparable later prehistoric time frames, major political centers rose and fell as power shifted from one place to another. Given the multitude of preceramic centers, the political dimensions of their competition, ascendency, and decline must have been equally vibrant. Finally, the idea of abrupt disappearance obscures what changed and why early ceramic civilization emerged in close conformity to patterns of the globe's other pristine evolutionary centers. Anthropology will be significantly informed by an understanding of the rise of a unique archaic civilization and the transformational dynamics that brought development back to a more normative evolutionary course.

Ultimately, the undeniable manifestations of early Andean civilization will challenge professional preconceptions for years to come. Two opposing camps are engaged in the discipline's future views on this critical issue. One pursues positivism and established methods of historical earth sciences to test multiple working hypotheses. Championed by Shady (2004), this approach is well exemplified in her recent popular volume, which should be read by all concerned parties. The camp championed by Haas and Creamer eschews chronology and development and defies well-established international research protocols (see Miller 2005, 68). This article is an excellent example of its approach.

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Haas and Creamer's article invites reflection on the importance of the Norte Chico, a region that is producing new information on the development of Andean civilization because of the research of a number of Peruvian and North American archaeologists. This work is important because Peru is one of the world centers in which this process emerged, and it is all the more important for Peruvian archaeology in that the destruction of the patrimony, especially on the coast, is advancing uncontrollably. Relying on surveys of new monumental sites in the Norte Chico and radiocarbon dating, Haas and Creamer offer an alternative model for the emergence of complex societies in the Andes.

I believe that their article, with its new evidence, offers a better approximation to the understanding of the emergence of complex societies in the Andes, although, as they point out, more research will be needed to identify the political nucleus whose power allowed the construction of the great monument complexes that we see today in the Norte Chico. As I see it, the construction of such monuments required pressure from those whose access to the best technological resources allowed them to dominate the rest of the population. It is possible that this population, through some mechanism that was not military but ideological, was committed to serving the populations of the interior. We need to keep in mind that we are dealing with social formations of thousands of years ago that had a different worldview and life ways that we cannot fully appreciate with our Western eyes. Perhaps, for example, they included forms of warfare that did not require walls.
At the same time, that the social organization that developed on the north-central coast lasted 1,300 years tells us a lot about the success of that organization in terms of political-social unification. We should turn our attention to this point and try to understand better the ways in which the ruling class administered and controlled a society that was showing the first evidence of social differentiation for so long a period of time.

Further research in the other basins that make up this region to compare with the inferences and data that the Norte Chico is producing is indispensable. It will provide us with the multiplicity of data that will bring us closer to an understanding of the emergence of civilization in the Andes.

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Following the lead of Shady (Shady, Haas, and Creamer 2001; Shady and Leyva 2003), Haas, Creamer, and their Peruvian colleagues have made an important contribution to recognizing the centrality of the north-central coast of Peru in the early development of complex societies in the Late Preceramic (or Late Archaic). I expect new and exciting information to continue flowing from this important project. Nevertheless, it is premature to theorize so definitively on the basis of the data from their survey and test project. The cultures cited as comparable to the north-central coast (Maya and Chaco Canyon) have been intensively and extensively excavated and analyzed for over a century. To support their hypotheses they will need the contextual information that comes from long-term, extensive and intensive excavation and analysis. Currently, such data exist only from Shady’s work at Caral. Although Haas and Creamer have produced an impressive number of new radiocarbon dates, these come from small test pits and open profiles (Haas, Creamer, and Ruiz 2004). Despite the destruction of inland sites that they note, their statement that “it is likely that the chicken-or-egg question will never be answered empirically” seems like an attempt to justify premature speculation. The published data suggest that further excavation can in fact yield a more definitive answer. In their earlier paper, Haas, Creamer, and Ruiz list three sites with dates early in the Late Preceramic Period: Porvenir, Caballete, and Huaricanga. For Porvenir and Huaricanga, they consider the early dates as outliers, while the early dates for Caballete (4,450 ± 290 and 4,440 ± 40 BP) overlap at one sigma the earliest date of 4,360 ± 175 for Aspero (Feldman 1980, and considering the 4,900 BP Aspero date also as an outlier); the Aspero date is from one of the last construction phases in a multiphase site.

The dating of north-central coast sites is critical because the role of maritime resources has not been settled. Interpretation of the developmental trajectory depends very much on whether the sequence begins on the coast or simultaneously on the coast and inland. There is little question that once inland settlements took off, they rapidly outstripped the coastal monuments, but that raises the question of origins (the question that Haas and Creamer wish to avoid). Even after the interior sites expanded, the one such site with detailed subsistence information (Caral) continued to depend on the ocean for virtually all of the animal portion of the diet just as the coastal sites depended on valley farmers for cotton, gourds, and plant foods. This symbiotic relationship was presaged in Moseley’s 1975 book and laid out more specifically in later publications (e.g., Moseley 1992). Thus that residents of the inland sites “were not doing their own maritime harvesting but getting their marine resources from fishermen living right on the coast” is no surprise.

Haas and Creamer’s statement that “the quantity of marine resources found in the trash at the inland sites is but a small fraction of the volume . . . at Aspero and the other coastal sites” ignores the near-absence of other animal remains at the inland sites and suggests that they have not considered how marine resources are processed for storage and transport. This often involves shucking mollusks and removing inessential parts from fish, and therefore one would expect much larger quantities of shells and fish bones at the coastal production sites than at the inland consumption sites. The statement that “at the inland sites . . . marine products are only part of a diet rich in domesticated plant products” is equally true for the coastal sites (e.g., Sandweiss and Moseley 2001); quantitative analyses of the plant and animal remains are necessary to assess the relative importance of different food sources at the different sites. Again, it is premature to conclude that “the available evidence . . . simply does not support the conclusion that marine resources were the dominant component of inland subsistence.” In the absence of extensive excavation and quantification of subsistence remains (e.g., Quilter et al. 1991), it is equally premature to suggest that “only by combining the total output of numerous coastal villages could the quantity of marine resources consumed at these inland economic and ceremonial centers have been obtained.”

Finally, the absence of contextual data in Haas and Creamer’s argument includes a failure to consider paleoclimatic and paleoenvironmental context and the influence of a changing physical world on the patterning of the resources exploited on the north-central coast during the Late Preceramic Period (see, e.g., Andrus et al. 2002; Sandweiss 1996; Sandweiss et al. 2001). One must ask whether there were environmental or climatic factors that privileged this region at the time, given that it was the never again the focus of such large-scale development. Further, the same question could be asked about any other “engine” proposed to explain the north-central coast florescence. It is premature to eliminate the potential role of marine resources without treating other factors equally.
Although Haas and Creamer have only conducted preliminary investigations, including mapping the sites, inspecting areas exposed by looting, and obtaining additional radiocarbon dates, they have published several articles that duplicate our interpretations. Since 1994 we have identified 18 monumental sites, assigning them to the Late Archaic period (3000-1800 BC), and conducted area excavations in Caral. We have established the significance of this period in the development of civilization (Shady 1997, 69-70), the precocious development of civilization in the north-central area in comparison with other areas of Peru and the Americas (Shady et al. 2003 [2000]; Shady 2003 c [2000]; 2003 e), the fact that this civilization initiated the cultural process that culminated in the Inca empire, constituting the substratum shared by the other Andean societies (Shady 2003 c [2000]; 2003 d), and the relevance of the liaison between settlements specializing in fishing and those specializing in agriculture to the promotion of social, economic, and political change (Shady 1997, 63-66; 2003 b [1999]; Shady and López 2000 [1999]). We have also conducted comparisons with other centers of civilization in different parts of the world (Shady 1997, 67-68; 2001, 3; 2003 d) and suggested modifications to the history of urbanism and social complexity (Shady 2003 c [2000]; Shady et al. 2003 [2000]).

We propose that civilization did not occur suddenly but was the result of a process, that monumental architecture was constructed several centuries after the initial settlement, that a political system integrated the specialized settlements of fishermen and farmers, that the interaction between these settlements extended to societies with other cultures and political organizations in the north-central area not only at the regional but at the interregional level (the so-called Kotosh and Mito traditions [see Burger and Salazar-Burger 1980, 1985; Bonnier 1997]), and that it was the confluence of achievements of these diverse societies, not just the contributions of the coastal Norte Chico region, that helped make the shared cultural process more dynamic.

Although sites with monumental architecture have been identified in other coastal valleys of the north-central area, none of them show the number and extent of the public buildings constructed in Supe or their quantity and monumentality. The volume of the main building of Vinto Alto (107,800.00 m³) is significantly smaller than that of the Greater Temple of Caral (289,255.37 m³). The sum of the volumes of mounds constructed in the valleys of Pativilca and Fortaleza (499,110.00 m³) cannot be compared with those of Supe (2,401,970.48 m³), nor have sites of equal or greater complexity been identified in the other valleys of the region or, for that matter, other regions. It has become evident that the sociopolitical system of Supe profited from the economic benefits achieved throughout the area.

In Supe the settlements have been classified, on the basis of their extent and volume, into five groups with marked distinguishing features (Shady et al. 2003 [2000]). These data suggest an organization with a hierarchy. However, we are excavating five settlements in order to define the political system with specific data and to evaluate the hypothesis that the inhabitants of Supe were integrated by a central government that recognized the autonomous authority of each community.

Haas and Creamer say that Supe has more extensive sites or sites with a greater built volume than Caral, but none of these is outstanding for its effective combination of the extent and organization of the constructed space of the city and the volume of its monumental buildings. An extensive area with few monumental buildings or an aggregation of buildings does not make a settlement more outstanding.

In Supe there are indicators of social division, hierarchized strata, and the unequal distribution of the surplus produced, including houses differentiated by their location in the city, their size, and the materials used to build them, the work of specialists evidenced by geoglyphs, the quipu, and agricultural technology, the design and planned construction of the city, and the organization of multifunctional activities (social, economic, political, and religious), burials of children, differentiated by the social positions of their families, and the sacrifice of an individual of approximate 20 years of age who showed evidence of having performed intensive and lasting physical labor. One sector of the population, benefiting from the trading, consolidated its power and leadership through religion, the production of knowledge, and the rendering of services.

The limitations of Haas and Creamer's proposals are associated with the method they employ: archaeological prospecting, sampling, and boring to obtain the earliest dates. This is apparent from the wide variation in the dates, which range from 9170 to 210 BC with the great majority falling between 2230 and 1870 BC.

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This is a welcome addition to ongoing debate on the remarkable Late Archaic cultural developments in the Norte Chico. It synthesizes the rapidly expanding literature on this subject and offers largely justifiable through somewhat uneven critiques of Moseley's (1975) maritime hypothesis and Shady's competing vision of Caral and associated developments as the cultura matriz of Andean civilization (Shady and Levy 2003). The alternative hypothesis that Haas and Creamer proposes, although lacking many critical details including its test im-
plications, is plausible, firmly based on Andean data, and worthy of serious consideration.

At the core of their hypothesis is the notion that seasonal participation in public rituals and construction of largely vacant inland ceremonial centers integrated various groups (in their case, littoral fishers and inland farmers). Something similar has been documented, for example, among the Qeros (Webster 1981; also see Sallnow 1987) and invoked to account for the longevity of such major ceremonial centers as Cañuachi (Silverman 2002) and Pachacamac (Shimada 1991, 2006). In fact, in recent fieldwork at the relatively small inland Late Archaic site of Cerro Lampay in the Fortaleza Valley, Vega-Centeno (2005) has empirically demonstrated the operation of the above principle at the local level.

I am intrigued by Haas and Creamer’s focus on cotton as a major resource for attracting fishers to inland ceremonial centers. Cotton is a relatively drought-resistant plant often planted along the margins of fields dedicated to food crops. If food crops such as beans, chile, squash, and achira contributed to the diet of inland populations, where were they grown and to what extent?

Haas and Creamer assume that the economically complementary littoral fishers and inland farmers were socially and politically autonomous. The long-standing coast-inland “transhumance” of Paijanese foragers (Chauchat 1988) and the late pre-Hispanic parcialidad (Netherly 1977; Ramirez-Horton 1981, 1995), however, raise the distinct possibility that farming and fishing communities in a valley evolved out of the same local transhumant populations and retained membership in them. Ceremonial participation in this case would have been for the celebration and renewal of their social solidarity. In fact, for the Late Archaic central coast, Patterson (1999) has already suggested the possibility of inland farmers’ exchanging their gourds and cotton for marine fish and molluscs harvested by coastal fishers who were members of the same group.

Although I commend Haas and Creamer for their advocacy of a regional approach, I feel that they too readily dismiss possible interrelationships of Norte Chico developments with those farther inland. They assert that early Norte Chico cultural transformation had no significant exogenous influence. It would be worth keeping in mind that to the east, just across the Andes, Late Archaic sites of the Mito tradition of Kotosh and Shillacoto (Izumi and Terada 1972; Bonnier 1997) in the upper Huallaga yunga zone not only remain to be excavated to their earliest levels but also do not represent the only or the largest sites of this period. Similarly, La Galgada in the coastal yunga zone of the Santa Valley (Grieder et al. 1998) is just one of various major preceramic mounds in the area, some of them considerably larger. The presence of a Mito-style enclosure with a split-floor level and a central hearth at Caral (Shady 2003[2000], 141) raises the possibility of the coalescence of local and Mito religious traditions. Onuki’s (1985) call for closer examination of the yunga zones on both sides of the Andes for the emergence of a Late Archaic agricultural lifestyle and associated cultural complexity deserves our attention. In general, yunga zones of ca. 1,000 to 2,000 m above sea level have not been intensely surveyed, and future parity in archaeological research may well show that the Norte Chico was just one of various loci of important cultural developments in the Late Archaic.

In their effort to distinguish Late Archaic Norte Chico developments as “historically and processually” unique, Haas and Creamer have stressed the scale and size of public structures in spite of their criticism of Shady for a similar emphasis and their own observations of repeated remodeling and resurfacing “indicating numerous construction events over many years.” We need clarification of the synchronicity of construction events within and between sites to gain a better understanding of the size and nature of the resident populations and labor forces involved. Similarly, one is left wondering what the calibrated dates they cite (without specifying margins of error) really represent, since most of them derive from secondary contexts and only the earliest and latest dates are provided.

I would like to see more attention paid to the paucity and undefined size and nature of residential settlements that articulated with ceremonial centers and why precocious Late Archaic developments in this region did not engender urbanism or more complex political organization in later (post-1800 BC) periods.

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How refreshing it is, in this time of microfocussed archaeology, to read a solid, comprehensive, big-picture processual study of what is still one of the most important issues facing archaeologists: the rise of civilization. Operationalizing their argument with the term “cultural complexity,” Haas and Creamer reveal the truly remarkable transformation—indeed, the organizational revolution—that occurred in the Norte Chico rather than becoming bogged down in the largely useless chieftom-state debate.

Haas and Creamer have amassed an extensive regional data base. Their regional perspective is informed by the data compiled by other archaeologists. Whereas Shady, looking out from Caral, sees that site as a state capital, Haas and Creamer, looking in, appreciate it as one of 30 monumental centers and view the Norte Chico as the crucible (an excellent choice of word) for an autochthonous social experiment that was to endure 1,300 years there and, ultimately, until the Spanish conquest of the Inca Empire more than 3,000 years later.

Haas and Creamer’s regional work is significant for renewed consideration of the “maritime foundations of Andean civilization” paradigm, since they demonstrate, on the basis of multiple valley surveys and excavations (yielding abundant
paleobotanical materials, including maize), that a plethora of major Late Archaic sites existed inland, where presumably simple irrigation agriculture would have underwritten a desert economy sufficient to meet the needs of the labor force that constructed their many monuments. Their findings confirm the results of previous inland projects they cite, and their treatment of the maritime theory is fair and balanced.

The radiocarbon dating of all these Late Archaic sites is unquestionable. Thus, the terminological shift in the Rowe-Lanning relative chronology for Central Andean prehistory is salutary. No longer is the Preceramic VI Period significant as a contrast with the Initial Period, given that the adoption of pottery-making (Rowe’s IP criterion) pales in comparison with other initial cultural developments of the Late Archaic Period, notably monumental architecture on a massive scale with multiple expressions over an entire region and underwritten by an agricultural economy based on irrigation and intensive exchange with littoral populations that provided marine foods. Notably remaining for development in the succeeding Initial Period was the public (monumental art contextualized in temples, often U-shaped) and portable (pottery, textiles, other media) iconography and architecture expressing the ideology that originated in the Norte Chico and represented further evolution of social and political complexity, most notably in the Casma Valley.

The clustering of Late Archaic monumental sites in the Norte Chico and the subsequent Initial Period clustering in the Casma and Lurin Valleys are important. I agree with Haas and Creamer that the Late Archaic proliferation is unlike known chiefdoms and does not correspond to a centralized polity (state). I am reminded of something that Edward Lanning once said to me, something that archaeologists too often forget: there were forms of political organization in the past that became extinct and have no ethnographic parallels.

Despite evidence of residential social stratification and monumental grandeur, it appears that material culture was not yet being deployed in the Late Archaic societies as it would be in later complex social formations. Whereas Shady sees state and regional hegemony, Haas and Creamer’s counter-proposal of “a broad regional pattern of economic, political, and ideological interaction and centralization” is more convincing on the basis of the available data. Their data support a model of independent, militarily noncompetitive polities rather than a centralized organization. This criticism of Shady’s model in no way diminishes the enormous contributions of her outstanding fieldwork.

Haas and Creamer’s model is exemplary in its integration of large-scale survey, multisited excavation, environmental perspectives, and theoretical considerations of the relationship between economy, ideology (including ceremonialism), and power (the latter including evidence for feasting as well as markers such as high-status residences). The extra-areal relationships (with other societies of the coast, with highland societies) of the Norte Chico should also receive attention. Haas and Creamer and archaeologists working elsewhere on the coast are now challenged to consider why other regions were not this early crucible of civilization, how the Norte Chico cultural pattern was exported so successfully, and why the Norte Chico became a long-term cultural backwater following its extraordinary, unprecedented florescence. As revealed and problematized by Haas and Creamer, the Norte Chico is chico in areal extent only. The region is going to play a large role in the practice and theory of Andean archaeology for many years to come.

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Haas and Creamer propose a revolutionary model for Andean state development. The entire argument centers on early (ca. cal 3000 BC) dates for the first monumental construction on the north coast of Peru. In my opinion, the data presented here and in other publications do not support such a sweeping conclusion for such an early date. Rather, they suggest a date of ca. cal 2500-2200 BC for the first monumental architecture at sites in their research area.

Simply put, when a site was occupied is fundamentally different from when the monumental architecture was constructed. In asserting that the mounds were built early, Haas and Creamer have perhaps ignored an essential characteristic of pre-Middle Horizon ( < AD 500) Andean monument building, the routine use of archaeological midden as construction fill in antiquity. We rarely find undisturbed, stratified deposits in complex architecture. Rather, we get superimposed fill and construction episodes that incorporate very old artifacts into the base of architectural terraces and platforms. Many of my colleagues will rightly not see the dated charcoal or plant remains in fill as being associated with the actual construction period of the architecture.

But the problem is even more pronounced than dating other buildings. Careful excavation usually reveals that monumental construction was preceded by very long periods of semipermanent and permanent village occupation of the site area. Once monumental construction begins, existing midden is a preferred fill material. Work at Aspero and Caral indicates that platform mounds were built in discrete construction stages with midden and shichra bag fill.

The data reported on by Haas and Creamer show that similar techniques were used in the sites that they investigated. Their excavation methodology, however, was not designed to date the construction episodes; rather, they sought to obtain, among other data, dates for the range of occupation of the site in stratified deposits. They then ignored the dates that are too early, calling them outliers, and chose those early dates that best fit their model.
A quick read of their online project reports suggests that the dates for the first monumental construction of sites such as Caballete fall at the middle to end of the third millennium BC. An excellent proxy indicator of monumental construction on the coast is the shicra bags that appear to have little use except as construction fill. Of the 16 dates presented for Caballete, 9 are described as fiber bags and the rest are described as charcoal or mixed plant fibers. Assuming that some or all of the bags are shicra while the other samples are most likely from quarried midden deposits, an interesting pattern is noted. The 9 bags have a date range from cal BC 1620-2490 with an average date of cal BC 2124. The midden remains, in contrast, have a range from cal BC 2060-3120 with an average date almost a half millennium older than the bags (cal BC 2633). In short, the only good proxies for monumental construction—the bags—date no older than 2500 BC, but the midden indicates an occupation centuries earlier. Researchers have routinely found carbon dates on the Norte Chico mound sites that go back millennia before 3000 BC. These cannot all be dismissed as outliers. The fact is that people have lived in and around these sites for millennia. Haas and Creamer have demonstrated that people occupied the site areas in the beginning of the third millennium BC and even earlier. They have not, however, provided data for dating the construction of the monumental architecture. In fact, the most parsimonious explanation of their data fits existing models quite well. Thus many of my colleagues will be a bit surprised to see how such sweeping conclusions can be drawn from such preliminary data.

Haas, Creamer, and their colleagues are to be commended for their dedication to long-term fieldwork. And they may indeed even be correct in their interpretations when more fine-grained chronologies are established and structures accurately dated. However, many colleagues will want proof of monumental construction at 3000 BC, not assertions based upon dates from noncontextualized fill remains. This is all the more important given the implications of this model for anthropological theory in general and for an understanding of the evolution of complex societies in the Andes. A sound excavation methodology designed to date the architecture of major sites could easily test their model of an early and archaeologically rapid development of complex societies in the interior. We all anxiously await the results of this work and look forward to more vigorous scholarly debates about this fascinating area of the world.

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The Pativilca system (a 25-km-long fertile zone formed by the the Fortaleza, Pativilca, and Supe Valleys [Kosok 1965, 217–23]) has recently become a major research focus, with three archaeological projects studying the societies that arose there during the third millennium BC: the Caral-Supe Project (directed by R. Shady since 1994), the Fortaleza Project (directed by me since 1996), and the Norte Chico Project (directed by J. Haas and A. Ruiz since 2002). The data produced by these projects have allowed Haas and Creamer to propose interpretations of the sociopolitical processes that took place in that time span. Evaluating the soundness of their explanation requires discussion of the quality of those data. A major claim is that the rise of complexity was a short-term process taking place ca. 3000 BC and continuing for 1,000 years. This statement depends on radiocarbon dates recovered from almost 20 sites in the region studied. Consistent occupation appears in regional terms, but it does not account for the degree of synchronicity or sequencing among sites. The possible correlation among sites seems to be supported by Haas and Creamer’s statement that they had long occupations. This statement is derived from their treatment of radiocarbon data (see table 1), which considers the oldest and youngest dates as markers of each site’s occupation. The weakness of this logic can be illustrated with the case of Cerro Lampay (Vega-Centeno 2005, 189–99). Excavations there allowed the identification of an occupational sequence that involved the construction, use, and entombment (as part of its abandonment) of a ritual building. Samples were taken from architectural contexts associated with the original construction (n = 4), its use (n = 1), and its entombment (n = 22). Twenty-five samples clustered between ca. 2400 and 2200 BC, clearly indicating that the site’s occupation lasted approximately 200 years, while the other two samples, associated with contexts of use (the youngest) and abandonment (the oldest), provided dates that differed by almost 1,000 years from the cluster’s extremes. The inconsistency between the resultant dates and their contexts caused me to reject them as references for the site’s occupation. Surprisingly, these are the dates that indicate Cerro Lampay’s life span in table 1. I am, therefore concerned about the treatment of the radiocarbon data and the accuracy of the chronological statements that support Haas and Creamer’s proposal. The 3000 BC date may be a good one for the beginnings of the process, but without acknowledging the changes and growth sequences of the settlements involved, one could make the mistake of extrapolating their surface configurations (related to their latest occupations) to the 3000 BC date.

With regard to the model’s theoretical scope, it is significant that, on the basis of the scale of platform mounds, the authors suggest the dominance of inland over shoreline settlements, while the statement about agriculturally oriented economies rests on the sites’ associations with modern irrigation canals and the lack of fishing tools (in contrast to the abundance of maritime resources) in inland settlements is seen as evidence of a network in which cotton played a key role. This model noticeably resembles the ideas proposed by Shady for the Supe Valley (Shady 2000b, 60; 2001, 35–36; Shady et al. 2003 [2000], 30) but differs in the role assigned to Caral. Haas and Creamer.
suggest the existence of autonomous polities, echoing what I have proposed for the Pativilca system (Vega-Centeno 2004; 2005, 348–59). Nevertheless, although I consider the possibility of a peer-polity interaction dynamic, I also note that there are not enough data to go farther in the characterization of such dynamics. Haas and Creamer are more optimistic.

With regard to the evaluation of social practices, Haas and Creamer concur with my inference on the role of feasting as a mechanism for labor recruitment (Vega-Centeno 2005, 20–30). Nevertheless, the sociopolitical implications of such practices are far from homogeneous. The scenario that I recorded in Cerro Lampay speaks of a weakly formalized communal leadership in a context of emergent complexity. It does not correspond to the centralization phenomena that Haas and Creamer see as occurring at least 500 years before Cerro Lampay was built.

In sum, this work has the merit of attempting to synthesize currently available data and ideas with regard to the sociopolitical processes that occurred during the third millennium BC. Nevertheless, no ideas are provided for testing the proposed model, which is presented more as a definitive statement than as a working hypothesis. We may need to be more concerned with the research lines required to expand our knowledge of the social phenomena that were occurring in the Pativilca system during that epoch.

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Haas and Creamer say that they have developed a new model, an alternative to the maritime-foundations model, for the origins of early civilization in coastal Peru that is based on their examination of regional-scale patterns in the Norte Chico. While other aspects of this paper warrant discussion, I will focus here on the empirical basis for their claim that regional-scale patterns require a new model to explain them.

Haas and Creamer's argument hinges on their interpretation of radiocarbon dates from samples collected in small excavation units at 12 sites. The validity of the argument requires that the dates obtained represent the major occupations at all (or at least most) of the sites they are studying and that the architectural features they catalog from the sites are contemporaneous. Early sites on the Peruvian coast are complex and often confusing, and understanding their structure and history generally requires extensive study, not just survey and test excavations. This is because many Late Preceramic and Initial Period sites were occupied at least intermittently in the Early to Middle Preceramic Periods, prior to the construction of major visible architecture. Archaeological evidence for Early to Middle Preceramic occupations can be relatively ephemeral and is often scattered across a site. Archaeologists conducting survey and test excavations may be unaware of early occupations, which may only become evident after extensive excavations. A lack of awareness of this problem can lead to major interpretive errors.

There are several ways in which Haas and Creamer's dates could be misleading. The first is that some—or even most—of the cultural materials dated, even if they are from monumental constructions, could contain fill from earlier deposits. This kind of problem is seen at many sites. For example, at the Late Preceramic site of Kilometer 4, domestic terraces were constructed with fill from earlier midden layers. It was only after several years of excavations that we found the ancient pits that allowed us to pinpoint the source of the fill. Without an understanding of the original context of the fill, we would not have known precisely what we were dating when we ran samples taken from the terraces. In Haas and Creamer's case, they may know something about the general context of their samples, but they have not studied the sites in enough detail to be sure that their dates represent the period of construction or use and not an earlier occupation. They will need to consider the possibility of both occasional and systematic reuse of earlier fill in interpreting radiocarbon dates.

A related issue is that the structure and construction history of early monumental architecture cannot be understood without careful excavation and detailed study. While some early buildings and sites may have been planned and built in a single episode, many were built, added to, and modified over time. Understanding the nature and even the size of early sites requires detailed study of the construction and use history of each architectural feature and of the site as a whole. Each site must be studied in detail and at least some larger-scale excavations must be conducted before a claim of large site size in any one time period can be verified.

Radiocarbon dates from small excavations generate more questions than answers. While they are useful for creating project research hypotheses and for developing proposals for future research, they are not ideal as a basis for wide-ranging conclusions. Haas and Creamer's radiocarbon data may come from samples from multiple contexts. Their very limited test excavations, however, cannot possibly provide a full understanding of site structure, stratigraphy, and, most critically, any reuse of previously or continuously occupied areas. Without solid archaeological data, including dates from well-understood contexts, it is premature for Haas and Creamer to call for any new model of regional interaction.

Haas and Creamer's field research has the potential to make an important contribution to the study of the origins of Peruvian coastal civilization. In this phase of the project, however, their conclusions are premature and subject to question. More detailed research at individual sites will be needed before larger-scale conclusions can be drawn and new models developed. The relationship between coastal and inland sites and the role of maritime resources can only be addressed through detailed and systematic archaeological study at a number of sites throughout the region.
Reply

In presenting an alternative model for the development of complex society on the coast of Peru during the third millennium BC, we were concerned about how our colleagues might react. The commentaries provided here are stimulating, encouraging, and challenging. (We will leave Moseley's comments to be independently evaluated by our colleagues.)

Many of them center on the importance of chronometric dating of the Late Archaic sites in the Norte Chico and elsewhere. There is some irony in the fact that there are now over 160 radiocarbon dates available for the Norte Chico region, the large majority coming from the period between about 3600 and 1600 BC. In comparison with these for most other time periods and parts of the Andean region, this is a very large number of dates. But, as a number of commentators note, dates are still inadequate to sort out the complexities of the Late Archaic occupation of this relatively small region. New dates should be forthcoming from active excavations at Aspero and Bandurria on the coast and from a number of sites in the Supe Valley. For the Proyecto Arqueolórgico Norte Chico, the 124 existing dates will be supplemented by analysis of an additional 50 samples taken from residential architecture contexts at the site of Caballete in 2006.

Sandweiss and Moseley are both dissatisfied with the idea that we may never be able to determine the historical antecedence of the littoral versus the inland sites. This is, however, the unfortunate conclusion based on material reality. Inland sites with monumental architecture and sunken circular plazas that are visible on historical aerial photographs of the four valleys of the Norte Chico no longer exist; they have been bulldozed away to accommodate modern constructions. None of the sites in the Pativilca Valley is more than about one-third intact.

They have all been (and continue to be) razed for agriculture or construction. Sites such as Shaura, in the Fortaleza Valley, once had a series of large monuments and today consist of nothing but isolated remnants. How will we ever know the time of occupation of these sites that no longer exist? We can certainly get a better range of dates for both littoral and inland sites, but which came first remains an open question. That being said, however, if we are correct, there are equally early dates for inland and littoral sites. It may be many decades before we get a full range of dates for the many sites in the region. In the interim it would seem far more productive to investigate the process of cultural development in terms of inland/littoral interaction rather than historical precedence. What seems clear to us is that cultural evolution in the third-millennium Norte Chico involved both agriculture and maritime exploitation and as such corresponds well to the process of emergence of sociopolitical complexity in other world areas. At the same time, it should be possible with systematic and scientific excavation and recovery of material remains to determine whether one component of this evolving system was politically dominant.

The inadequacy of the dates for the region is due to the facts that (1) the Late Archaic has no ceramics or other comparable material that could generate an accurate relative chronology and (2) there are a large number of sites spanning a long period of time. A dozen radiocarbon samples from a site with multiple mound complexes, residential architecture, and stratified trash are only going to yield a general perspective on the nature of occupation at that site. Understanding the chronology of any of the larger sites, such as Pampa San José, Caral, or Caballete, is going to take hundreds of fully contextualized radiocarbon dates. One need only look at the new perspectives gained from intensive dating at the site of Chavin de Huantar to see the importance of analyzing many samples (Kembel and Rick 2004). With the extensive and well-funded work at Caral described by Shady and Moseley, we are hoping to see the publication of extensive and systematic radiocarbon dates necessary to understand the complex occupation of this site.

Other commentators question our use of the full range of radiocarbon dates for Late Archaic sites in table 1. We do this not to claim them as the range of dates of occupation but simply to illustrate the general range of dates for the Norte Chico as opposed to other areas. Vega-Centeno makes the excellent point that the extreme dates for Cerro Lampay, for example, are not a good indicator of the probable dates of occupation at this site. We agree, and in the body of the article we use a much narrower range of dates for the site. For the table, we are conservative in presenting the dates and use all the available dates, not just those we think are appropriate. In analyzing dates for Aspero, for example, Feldman (1983, 246) set aside one date (4,900 ± 160 BP) as being "too early." Subsequent dates for other sites in the region are now in the same range, and in fact the early Aspero date may not be "too early." Kaulicke catches a mistake in our table, which lists 1,350 ± 140 BP as the earliest date for Kotosh when it should be 3,900 ± 900 BP (2320 BC). As Stanish points out, we have "edited" our own dates as we use them for interpretation—a very common exercise in archaeology, as pointed out by Vega-Centeno. We do so in looking at the dates as a complete data set. Looking at all 124 dates for the 13 sites tested by our project, there are 8 dates before 3500 BC and then a break of 400 years followed by a relatively continuous sequence of dates from 3100 to 1600 BC. For purposes of interpretation, we chose to use this continuous sequence rather than the somewhat isolated earlier dates. We certainly recognize the great likelihood of earlier occupations inland, but the evidence for communal construction and intense occupation with dense trash deposits does not appear to emerge before about 3100 BC.

The need for more radiocarbon dates, however, does not preclude some basic conclusions about the Late Archaic Norte Chico occupation. A number of the commentators (Stanish, Shimada, Wise) ask whether the dates from Norte Chico sites
represent construction of communal architecture or simply the incorporation of earlier fill into later monuments. It needs to be clarified that our project has involved three kinds of excavations: (1) 1-x-2-m test pits in areas of trash and/or residential architecture, (2) cleaning of profiles left from looters or construction damage to monumental architecture, and (3) 5-x-5-m test units adjacent to monumental architecture. Several of the pits excavated in trash uncovered buried platforms and floors. Certainly not all of the material taken from the test pits was associated with any monumental construction at the sites, and some of it may represent earlier occupations. At the same time, datable material from the excavation and clearing of exposed monument profiles was deliberately taken from construction material itself. Shicra bags were specifically sampled because, as noted by Stanish, these are good indirect indicators of monument construction. Samples were also taken from fiber tempering materials in wall and floor plaster—an even more direct measure of actual construction. Overall, there are now at least 7 dates taken directly from construction material that range from 3120 to 2690 BC (table 3). These early dates do confirm Stanish’s analysis to the contrary, that construction of monumental architecture was taking place at least at some of the inland sites by the beginning of the third millennium BC. We have discussed at greater length elsewhere (Haas, Creamer, and Ruiz 2004) our interpretation of broad blocks of construction activities through the course of the third millennium BC, and these observations still stand.

These early dates speak to what Shady calls the “precocious” nature of the Late Archaic in the Norte Chico. The body of dates now available, when compared with the dates available for other areas, shows that the Norte Chico is indeed precocious in exhibiting exhibit a broad range of features that are found elsewhere but later. Shimada, for example, argues that the presence of a “Mito-style” hearth at Caral may indicate a “coalescence of local and Mito religious traditions.” The problem with this idea is that the designation of this type of hearth as “Mito-style” is an artifact of excavation history. Had Kotosh, with its later dates, been excavated after Caral, the hearth would have been called “Caral-style” and the Kotosh example would be recognized—as it should be—as derivative of an antecedent coastal pattern.

The idea of earlier manifestations of cultural complexity and monumental construction in the yunga zones of the Andes or possibly around La Galgada or El Paraíso is at best conjectural. The single early date (pre-230 BC) from La Galgada (2690 BC) is from a contaminated context associated with a mango pit (Greider et al. 1988). The suite of dates from El Paraíso does not start until 2230 BC (Quilter 1985). There is simply no empirical evidence for early monumental

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Table 3. Early Dates from Sites in the Fortaleza and Pativilca Valleys

<table>
<thead>
<tr>
<th>Site</th>
<th>Provenience</th>
<th>Material</th>
<th>Contextual Information</th>
<th>Lab No.</th>
<th>Yrs. BP</th>
<th>Date BC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caballe</td>
<td>Sec. A Test Pit 4 Lev. 10</td>
<td>Fiber bag fragments</td>
<td>From wall plaster on the structure in the bottom of the looter’s pit, west profile</td>
<td>BETA-199062</td>
<td>4,160 ± 70</td>
<td>2740</td>
</tr>
<tr>
<td>Caballe</td>
<td>Sec. B mound profile 1</td>
<td>Mixed plant fibers</td>
<td></td>
<td>ISGS-5523</td>
<td>4,450 ± 290</td>
<td>3120</td>
</tr>
<tr>
<td>Caballe</td>
<td>Sec. C Bloc 1 SQ-1 Lev. 8</td>
<td>Fiber bag</td>
<td></td>
<td>ISGS-5730</td>
<td>4,370 ± 120</td>
<td>3040</td>
</tr>
<tr>
<td>Huaricanga</td>
<td>Sec. C mound profile 1</td>
<td>Fiber bag fragments</td>
<td>In situ fiber bag</td>
<td>GEO 30508</td>
<td>4,230 ± 90</td>
<td>2790</td>
</tr>
<tr>
<td>Porvenir</td>
<td>Exposed profile adjacent to Mound A. Level D</td>
<td>Fiber bag</td>
<td>From construction fill</td>
<td>ISGS-5513</td>
<td>4,160 ± 70</td>
<td>2740</td>
</tr>
<tr>
<td>Porvenir</td>
<td>Sec. A Test Pit 3 Lev. 7</td>
<td>Fiber bag</td>
<td>Fiber bag lying on a thick floor laid down on sterile sand</td>
<td>ISGS-5520</td>
<td>4,110 ± 70</td>
<td>2690</td>
</tr>
<tr>
<td>Upaca</td>
<td>Sec. A mound profile</td>
<td>Fiber bag</td>
<td>Fiber bag taken from construction between two floors</td>
<td>GX-30117</td>
<td>4,180 ± 110</td>
<td>2740</td>
</tr>
</tbody>
</table>
architecture and stratified cultural complexity outside the Norte Chico before 3000 BC. The “precociousness” of the Norte Chico, however, has been noted by Kosok (1965), Williams (e.g., 1985), and the Pozorskis (1990): “Since these sites in the Fortaleza-Pativilca-Supe area, inland from Aspero, represent an especially dense concentration of sunken circular plazas and corporate labor mounds, this central coast zone appears to be a likely area of origin for this unique architectural form [the sunken circular plaza], monumental construction, and early complex society.”

The issue of construction volume raised by Shady also relates to radiocarbon dating. The mound volumes provided for a number of sites in the Pativilca and Fortaleza Valleys (table 2) were derived from detailed topographic maps generated by total-station and ArcGIS surveying software. Shady states that the main platform mound (Greater Temple) at Caral has a volume of 289,255 m³, but she provides no empirical basis for this figure. Is it based on precise topographic maps drawn from surveying instruments? Basic ground measurements? Aerial photographs? Until Shady provides basic volumetric data on this and the other mounds at Caral and elsewhere in the Supe Valley, her estimates of total construction volume cannot be compared with the surveyed topographical data derived from maps of the sites in the Pativilca and Fortaleza Valleys. There are also serious questions about which of the 18 Supe Valley sites identified by Shady were occupied at any time in the Late Archaic and what architecture is being included. There are published radiocarbon dates for eight sites in the Supe Valley: Caral, Aspero, Chupacigarro, Alpacoto, Lurihuasi, Pueblo Nuevo, La Empedrada, and Piedra Parada. The first five yield dates from the Late Archaic, but the dates for the latter three sites, published by Zechenter (1988), all postdate the Late Archaic. Other sites, such as Peñico, Huacache, Cerro Colorado, and El Molino, have extensive ceramics on the surface and in exposed cuts in architecture and associated fill. There is no independent evidence that these sites were occupied to any extent in the Late Archaic. Our own testing of sites having surface characteristics of the Late Archaic (circular plaza or stone platform mounds built with shicra bags) revealed that some (e.g., Potato, Cerro Blanco 2) were occupied principally in the following Initial Period. Before the intensity of monument construction in the Supe Valley can be established, it will be necessary to have independent radiocarbon assessment of the time of occupation of these sites, as well as a way of deriving volume measurements. Although our excavations in Pativilca and Fortaleza have been relatively small-scale, when coupled with the detailed site maps they do provide the kind of scientific evidence needed to determine the general period of occupation of these sites.

Beyond the issue of radiocarbon dating is the role of cotton and other agricultural products in the emergent economic system of the Norte Chico Late Archaic. A number of commentators (Aldenderfer, Kaulicke, Moseley) raise the possibility that cotton in particular may have been grown in the somewhat saline littoral floodplains. This is certainly possible; however, this is not where cotton is grown in these valleys today. Cotton production, still active in the region, takes place in fully irrigated inland locations where there is an abundance of fresh water. The more saline littoral locations are primarily harvesting grounds for sedges and reeds used in baskets and mats—the same material used in making shicra bags. At the same time, concentration on the location of cotton fields ignores the wide array of other agricultural resources that are consistently found in the trash of both inland and littoral sites. In addition to avocado, lucuma, chile, beans, pacay, squash, guava, achira, and camote, there are increasing signs of the importance of corn (Zea mays) at all of the sites. There is corn at Caral (Shady 2004) and Aspero (Willey and Corbett 1954) and (as pollen) in a large majority of test pits excavated by our project. Using the same arguments raised by Stanish and Wise for the likelihood that early occupations will be represented in trash deposits, the ubiquity of corn pollen in these same deposits indicates the early importance of corn as a component of the Late Archaic diet. Corn and the other fruits and vegetables listed above arent salt-tolerant and do indicate the critical importance of inland, irrigation agriculture. None of this obviates Aldenderfer’s point that understanding the prehistoric irrigation system will require extensive geomorphological research.

Dillehay’s remarks about lithics and the possibility of earlier sites in the side quebradas are well taken. Recently completed surveys in the Huaura and Pativilca Valleys have indeed shown the presence of Early and Middle Archaic hunters and gatherers, some associated with relatively simple residential architecture. None of these sites show any clear precedence for the emergent monumentality and complexity of the Late Archaic. Identification of lithics is also of great importance in this part of the coast. When the present project was initiated in 2000, there was relatively little recognition of lithics on the central coast, and lithics were not being systematically collected. A big part of the problem is that the lithic technology is expedient and based on locally available stone materials. People appear to have picked up a readily available local stone, knocked off a flake or two, used it, and thrown it away. There is little retouch or use wear. We have found almost no high-quality imported raw material in either excavations or surveys. Because of the poor quality of local lithics, we have instituted specific training in lithic identification for people working on excavations and survey. Such training is essential for any archaeological project in this part of the coast.

Finally, we need to address Sandweiss’s comment (and the suggestions of others) that it is premature to be offering such broad theories for regional patterns in the Late Archaic. The problem here is that the maritime hypothesis, developed 30 years ago with far fewer data than are available today, remains the dominant theoretical framework for the origins of complex society in the Andes. Sandweiss (Sandweiss and Moseley 2001) himself continues to defend the hypothesis in...
spite of the fact that there are only seven radiocarbon dates for the supposedly prototypical site of Aspero. While the hypothesis was interesting in the 1970s, it is no longer viable. Looking again at the history of archaeology, had Caral or any of the other 30 inland Late Archaic sites been excavated before Aspero, it is difficult to conceive of the emergence of a theory proposing maritime foundations for the early emergence of a complex sociopolitical system on the coast. While we concede that our model is hypothetical, it is supported by a wide range of available data. As Silverman and Ruiz stress, it is time to assemble new data and build stronger theoretical frameworks for investigating the emergence and early development of the first truly complex, centralised, hierarchical polities in the Andean region. Without a full understanding of the Late Archaic occupation of the Norte Chico region it is going to be impossible to explain the development of subsequent complex polities elsewhere in the region, from Casma to Chavin de Huantar to Wari and the Titicaca Basin. A distinctly Andean pattern of civilization begins in the Norte Chico in the third millennium BC, and subsequent developments have historical roots in this small section of the Peruvian coast. As more work is done it will become increasingly clear that the crucible of Andean civilization is to be found at Caral and the other early sites in the Norte Chico.

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