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THE ORIGIN OF STATE SOCIETIES IN SOUTH AMERICA

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■ **Abstract** The earliest states developed in the central Andean highlands and along the central Pacific coast of western South America. The consensus in the archaeological literature is that state societies first developed in the central Andes in the early part of the first millennium C.E. A minority opinion holds that first-generation states developed as early as the late second millennium B.C.E. in the same area. The Andean region constitutes one of a few areas of first-generation state development in the world. This area therefore represents an important case study for the comparative analysis of state formation. This article outlines the arguments for state formation in South America, presents the evidence, analyzes the underlying assumptions about these arguments, and assesses the South American data in terms of contemporary anthropological theory of state evolution.

SOUTH AMERICA

South America, a continent approximately 17,870,000 km^2 in size, has been divided into as few as three and as many as two dozen different cultural areas by anthropologists (Willey 1971, pp. 17–24). Borrowing on the earlier work of Wissler (1922, pp. 245–57) and Bennett (1946, p. 1), Lumbreras (1981, p. 42) provides the most common cultural geographical division of South America: the Andes, the Llanos, Amazonia, the Chaco, the Pampas, and Patagonia (Figure 1). First-generation states evolved only in the central and south central part of one area, the Andes. This area, referred to collectively as the central Andes, would correspond to parts of Wissler's Inca area and to all of Willey's Peruvian cultural area (Willey 1971, p. 4). Bordered on the west by the Pacific Ocean, this culturally precocious region stretches from roughly the Peru-Ecuador border in the north, to the low forests of Peru and Bolivia in the east, and south to the southern part of the Titicaca Basin in Bolivia.

Figure 1 South American cultural areas.

THE CENTRAL ANDES

The central Andes extends over 1,000,000 km^2 and includes some of the world's driest deserts, rugged mountainsides and peaks, highland grasslands, and low forests (Figure 2). At the time of European contact, the central Andes was home to several dozen distinct ethnic and linguistic groups. In spite of this diversity, the idea that the central Andes is culturally unified and homogenous has been a subtext in anthropological and historical studies since at least the European conquest. A good argument can be made that such a bias developed directly out of Inca and Spanish

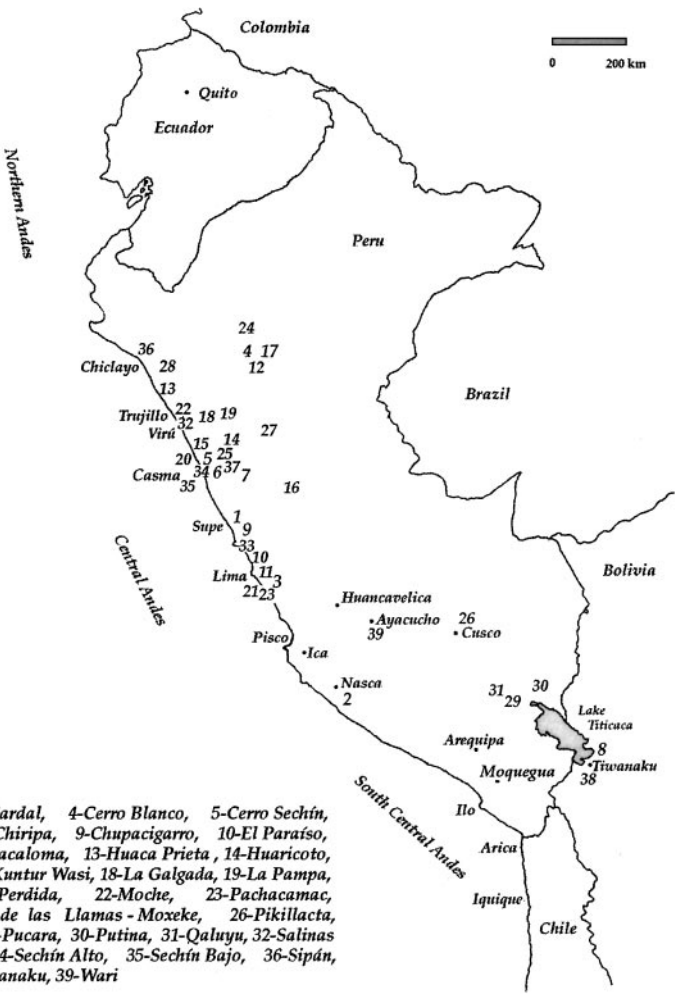

Figure 2 The central Andes.

imperial propaganda that promoted the cultural unity of empire. It is therefore not surprising that many definitions of the Andean or central Andean cultural area correspond rather neatly to the Incan imperial boundaries in the 1530s.

If one used the political and linguistic boundaries of the later first millennium C.E., there would be a very different picture. Around C.E. 600 there were three relatively distinct cultural, linguistic, political, and geographical areas in the central Andes. The Moche culture developed in the northern coastal desert. In this area, people spoke Mochica and related dialects (Torero 1990). In the central highlands, the Wari state dominated the political landscape. Most likely, an ancestral form of Quechua was spoken in this region. The people of Tiwanaku ruled the south central Andean *altiplano*, or high plains. In this region, Aymara, Pukina, and related dialects were the dominant languages in the sixteenth century, and we presume that some form of proto-Aymara (Aru) and/or Pukina was spoken in this area at the time of Tiwanaku. Each of these areas has its own research traditions. Given that this discussion focuses on the origin of the state and that many archaeologists point to these three regions as home to the earliest states, these areas structure this discussion.

DEFINING THE STATE

Flannery (1998, pp. 15–16; 1999) makes the essential point that the definition of the state is a task for anthropologists and political scientists working with ethnographic or historical data. The role of archaeologists, in contrast, is to define the material indicators of this phenomenon and then assess the data to define the emergence of the state. The anthropological definitions of the state, as well as its material indicators in the archaeological record, are closely linked to the theoretical framework in which the concept of the state is developed. Definitions that focus on political power and social classes tend to define states broadly, with many archaeological cases fitting into the definition. In most neomarxist frameworks, the existence of social classes in and of itself is the defining feature of state organization. Silva Santisteban (1997, p. 22), for instance, argues that the existence of any monument that is significantly large or elaborate enough to indicate group labor above the household, is evidence for state organization. In his words, "... the presence of a ceremonial center [is] tangible evidence of the sociopolitical formation that we call a State" (Silva Santisteban 1997, p. 101). A theoretically similar position is advocated by Haas (1987, p. 32), who also sees the exercise of economic power to be the essential variable in the definition of the state. In the Andes according to this definition, large earthen constructions reflect concentrated economic power and a state organization (Haas 1987, p. 22).

A more common view is that monumental architectural construction precedes the state in western South America. In this view, nonstate societies are fully capable of amassing sufficient labor to build large monuments, usually through religious or "theocratic" means (Burger 1995, p. 37; Fung Pineda 1988, p. 80; Moseley 1975,

1992). Moseley refers to complex, prestate societies as "civilizations," in which hierarchy can exist without hereditary rank (M.E. Moseley, personal communication). In this context, the ideology represents the community, not individuals or elite groups, and corporate architecture is created to provide focus for community rituals and the materialization of chief ideologies (e.g. DeMarrais et al 1996, Dillehay 1992).

In models that emphasize the religious functions of early monumental constructions, the state develops after the shift from a kin-based, chief "hierarchy at the service of the collectivity" (Albarracin-Jordan 1996, p. 70) to a hierarchy headed by a state elite that acts largely in its own interest. The state is defined by a series of factors that distinguish it from chief, kin-based organization. The relative importance of these factors is based upon the particular theoretical framework in which they are proposed. In the Andes, factors that have been proposed are generally consistent with the literature on state formation from around the world.

THE EMERGENCE OF COMPLEX SOCIETY IN THE LATE PRECERAMIC PERIOD

At the beginning of the fourth millennium B.C.E., all peoples in South America lived in small hunting, gathering, and horticultural camps, or, on rare occasions, in small semipermanent villages. By 3000–2500 B.C.E., the first fully sedentary and complex societies developed on the Pacific coast of Peru. Social complexity in the Andean archaeological record is generally indicated by the existence of large monuments that have functions beyond domestic residence and subsistence. Andean archaeologists refer to such architecture by several terms, including corporate, civic-ceremonial, elite-ceremonial, ritual, or public architecture. Settlements that have pyramids, courts, walled plazas, and so forth are considered to be organizationally more complex than politically egalitarian villages. The theoretical link between corporate architecture, a term first proposed by Moseley (1975), and cultural complexity rests on the premise that the monuments were built by, and meant to be seen and used by, a social group larger than a few families.

The Coast

Beginning around 3000 B.C.E., a few societies with a predominantly nonagricultural subsistence base built corporate monuments on the Peruvian coast. The site of Aspero, located on the northern edge of the Supe River adjacent to the Pacific Ocean, represents one of these early settlements. The earliest phases of corporate construction began around 2800–2000 B.C.E. (Feldman 1987, p. 12; Moseley 1992a, p. 117) (dates uncorrected unless noted otherwise). One large monument is the Huaca de los Idolos, a flat-topped pyramid 1500 m^2 in size used for ritual display (Feldman 1987, p. 11; Moseley 1992a, p. 115). Along with this pyramid, Aspero has 12–15 hectares (ha) of domestic midden areas, and 17 other pyramids

between 1.0 and 4.0 m high. Excavations at the site reveal a pattern of continually rebuilt constructions by a resident population, a pattern found at many sites throughout the coastal valleys at this time.

Perhaps the largest settlement of this time period is located 2 km from the coast in the Chillón valley and is known as El Paraíso. According to Quilter (1985, p. 294) and Moseley (1992a, p. 119), the major construction at the site was in progress by 2000 B.C.E., and it continued to be occupied for two to four centuries. The 100,000 tons of stone masonry construction is found in at least seven mounds that form a giant U shape over 58 ha (Quilter 1985, p. 279). It has a huge, 7.0-ha plaza located between the arms of the U. Many structures were elaborately decorated. In particular, one structure was painted red and had a bright orange burnt floor with evidence of fire rituals. Moseley (1992a, p. 120) notes that artifacts include red pigment grinders, bird feathers, unfired figurines, and fruit tree branches. Earlier, we believed that there was little evidence for permanent habitation at the site. However, later work indicates that it indeed had a resident population (Fung Pineda 1988; Quilter 1991b, p. 427; Quilter 1991a; Quilter et al 1991).

Another large Preceramic site is known as Chupacigarro or Caral. Located inland in the Supe valley, the site is an impressive 50-ha Preceramic settlement that includes circular structures with ramps 50–80 m in diameter (Engel 1987), 25 pyramids up to 25 m high, and evidence of a sedentary population (Silva Santisteban 1997, pp. 103–4).

The three sites of Chupacigarro, Aspero, and El Paraíso are located in different ecological zones. They represent the geographically broad settlement distribution of major Preceramic sites, including the immediate coast, a site within a short walk from the ocean, and an inland site well away from the marine resources. These three examples indicate that the first monumental architecture was constructed in different ecological zones, where access to marine and agricultural resources varied greatly.

The Central Highlands

During the late Preceramic, a widespread building and ritual tradition developed among a number of formerly egalitarian highland communities as well. This has been called the "Kotosh Religious Tradition" by Burger & Burger (1980). At the type site of Kotosh, Burger (1995, p. 47) describes two artificial mounds and a series of superimposed temples. The highest mound was 14 m high and had a three-tiered platform with numerous chambers built into the base. There are at least 11 chambers and possibly up to 100 chambers at Kotosh itself (Burger 1995, p. 48; Izumi & Terada 1972). A prominent feature of this architectural tradition is small buildings, usually plastered and decorated with firepits in the floor. One of the most spectacular of these Preceramic structures is the Temple of the Crossed Hands at Kotosh. Other sites in the highlands, such as Huaricoto, La Galgada (Grieder et al 1988b), and Piruru (Bonnier & Rozenberg 1988), have similar ritual constructions,

but the amount of labor and architectural complexity of each site varies. Paintings of serpents, niches in the walls, fire ritual, and repeated burying and rebuilding of the structures are some of the salient features of the Kotosh Religious Tradition.

La Galgada is a particularly important Preceramic period site that participated in the Kotosh tradition. Around 2300 B.C.E., the people at this site constructed elaborate round chambers with fire pits. Significant features of La Galgada include a circular court 17 m in diameter, the existence of "megalithic shaft tombs" (Grieder 1988, p. 73; Grieder & Bueno 1985, p. 108), and exotic objects in the fire pits.

The architecture of the Kotosh Religious Tradition is different from contemporary coastal sites. In the highlands, corporate architecture is characterized by single, free-standing buildings with separate entrances and no internal connections. There is no evidence for site planning, restricted access, or formal designs that were replicated across sites (Burger 1995, p. 51). In contrast, coastal traditions were characterized by much larger buildings with patterns of restricted access, although at least one site, Huaynuná in the Casma, has a ventilated hearth similar to the Kotosh Tradition (Pozorski & Pozorski 1990). Certainly, in both coast and sierra, monumental architecture was widespread by the beginning of the second millennium B.C.E.

Late Preceramic States?

The late Preceramic period witnessed the emergence of the first nonegalitarian societies in South America. On the Pacific coast, it is clear that some of the earliest settlements did not rely on agriculture for a significant proportion of their diet. Moseley (1975, 1985, 1992a, 1992b) has persuasively argued that many Preceramic coastal populations were based predominantly on the exploitation of marine resources. His "maritime hypothesis" has been supported by excavations at Aspero, Huaca Prieta, and other sites (Quilter & Stocker 1983, but see Wilson 1981). This work indicates that an economy based heavily on marine products was sufficient to support the construction of monumental architecture.

It is significant that cultigens are also found in Preceramic period middens. While marine resources were the staple in coastal Preceramic sites, the inhabitants also utilized both wild and cultivated food and industrial crops (Feldman 1987, p. 9; Pozorski & Pozorski 1990; Quilter & Stocker 1983) such as cotton, gourd, legumes, *achira*, and squash. Other Preceramic period sites were located away from the littoral. Settlements such as Chupacigarro exploited a mix of plant agricultural products and the collection wild foods. Marine resources at the site were obtained by exchange with other groups and/or direct exploitation.

In the highlands large Preceramic monuments were constructed in economies based largely on rain-fed and small-scale irrigation agriculture, plus the elaboration of exchange networks (Fung Pineda 1988, p. 71). Burger (1995, p. 32, 53) notes that marine fish bone and shell have been found at all Preceramic highland sites that have corporate architecture and notes that the population of Salinas de Chao controlled salt production and exchange (but cf. Pozorski & Pozorski 1990,

p. 24). In short, there are solid cultural links between the highlands, coast, and even eastern slopes in the late Preceramic (Bonavia & Grobman 1979; Quilter & Stocker 1983, pp. 554–55).

The consensus in the literature is that the late Preceramic period represents at most the development of ranked society typical of simple chiefdoms in the evolutionary anthropological literature. Terms used to describe this organization include "chiefdoms" (Feldman 1987), "societies with labor organizing leaders" (Bawden 1999, p. 172) "centralized, nonstate polities," and "regional centers" (Quilter 1991a). Certainly, the data indicate that there was no one site that was a center of a regional polity. Rather, there were a series of autonomous settlements of varying complexity up and down the coast. Few scholars argue that any political organization as complex as the state developed in the Preceramic. One exception is Silva Santisteban (1997, pp. 100–2), who argues that the pristine state had formed by 2300 B.C.E. on the Peruvian coast.

THE INITIAL PERIOD

The Coast

The Initial period dates from circa 2000–1800 B.C.E. to circa 900–600 B.C.E. The Initial period witnessed a rapid growth in the size of sites, development of architectural complexity, and general social complexity based on late Preceramic period antecedents. Several regional architectural styles emerged in this period. One of these is known as the U-shaped architectural tradition, first described by Williams (1971, also see Carrión Sotelo 1998 for an example of a recent field study). The ideal layout was composed of a high, flat-topped pyramid mound flanked in the front by two projecting linear structures to form a large U.

The site of Huaca La Florida, located 11 km inland in the Rímac valley, is one of the oldest of the classic U-shaped structures so far studied (Von Hagen & Morris 1998, p. 51). The main pyramid is 17 m high and the two projecting structures rise 4 m from base for approximately 500 m. Construction at the site began in the eighteenth century B.C.E. Burger estimates that the site required 6.7 million person-days of labor. He notes that it is not even the largest of the U-shaped sites on the coast. The little-known site of San Jacinto in the Chancay valley is four times as large, with a 30-ha plaza and two million cubic meters of fill (Burger 1995, p. 61). While centered on the central coast of Peru, this U-shaped architectural tradition has been noted as far south as the Lake Titicaca Basin (Stanish & Steadman 1994, p. 13) and as far north as Piura (Guffroy 1989, pp. 161–207).

A second architectural tradition of the Initial period centers on the construction of sunken, circular courts usually next to pyramids. This tradition, concentrated north of the Chancay valley, has been found in at least 50 sites. Many of these are located in the Supe valley (Burger 1995, p. 76). A third architectural tradition is known as Cupisnique, characterized by low platform pyramids, large stairways, and rectangular courts. Colonnades and elaborate painted sculptures distinguish this

architecture (Burger 1995, p. 92). The architectural complex known as Huaca de los Reyes at the site of Caballo Muerto is emblematic of this late Initial period style. Ware-feline motifs executed as adobe friezes adorn this huaca (Conklin 1996).

One of the richest areas of the Initial period culture is the Casma valley. By 1400 B.C.E. or perhaps earlier, the site of Sechin Alto was the largest settlement in the Western Hemisphere (Burger 1995, p. 80, Moseley 1992a, pp. 123–24, Tello 1956). It is dominated by a huge, stone masonry platform 300 m in length and 250 m in width that forms the base of a U-shaped center.

Located near Sechin Alto is the site of Cerro Sechin. The oldest construction at Cerro Sechin was built on a stepped platform with three levels (Samaniego et al 1985, p. 173). In this early Initial period, the site covered only about 5 ha. A possible sunken court was located in the front of this pyramid and noted long ago by Tello. Perhaps the most outstanding feature of Cerro Sechin is the numerous carvings in stone on the outer wall of the pyramid. These early Initial period carvings depict macabre scenes of war, including decapitations, trophy heads, and body parts, plus warriors and victims in various states of subjugation.

The Casma valley site of Pampa de las Llamas-Moxeke stands as one of the most important Initial period sites in the Andes. The site has two huge artificial mounds, plaza areas, other buildings, and a substantial habitation area. The Moxeke mound measures 160 × 170 × 30 m and is decorated with elaborate friezes along its flanks. The second mound, known as Huaca A, measures 140 × 140 m at its base and reaches up to 9 m in height. Both of the mounds are aligned along a central axis. These two aligned pyramids demarcate high-walled enclosures, a pattern that suggests a surprisingly high degree of site planning. Pozorski & Pozorski (1994, p. 67) note that middens up to 1.5 m deep are found at the edges of the corporate architecture. This residential debris, at least 110 "administrative" buildings, plus the mounds and enclosures cover up to 200 ha, although the total area of purely residential midden and corporate architecture is less that 75 ha.

The Casma valley data, as well as that from other valleys, indicate that the north Pacific coast was a major area of cultural development in the Initial period. However, the highlands also witnessed the rise of architecturally complex and large settlements as well.

The Central Highlands

U-shaped structures were built at sites throughout the highlands during the Initial period. At La Galgada, ritual architectural styles shifted away from the earlier fire-pit tradition. Likewise, this period witnessed the construction of a U-shaped building on a Preceramic temple mound, and the continuation of large burials (Grieder et al 1988b, pp. 202–3). Significant architectural monuments were erected at Kuntur Wasi in Huacaloma, Poro Poro, at the site of Chavín, and at dozens of other highland settlements (Burger 1995, pp. 109–112; Shady 1993). Construction at Chavín began by at least 900 B.C.E., and possibly earlier (Rick et al 1998, p. 208). The settlement witnessed the building of a number of corporate

architectural features. During this period Chavín was the center of a highland style of elite pottery, textile, and stone art.

The South Central Highlands

The first construction of corporate architecture in the south central Andean highlands began in the Titicaca Basin around 1300 B.C.E. Hastorf (1999) and her colleagues have uncovered corporate structures at the site of Chiripa, located in Bolivia in the south Titicaca Basin. These early small rooms were built with uncut stone, had plastered floors and walls, and were sometimes built low into the ground. Over time, this architectural style became more elaborate. The plastered area became larger, rooms were added to the exteriors, the floors were sunk deeper into the ground, and walled terraces were built around the entire architectural complex. By 900 B.C.E., Chiripa was a nucleated habitation and ceremonial center spread over 7.5 ha (Bandy 1999, p. 26).

By the first centuries of the first millennium B.C.E., many peoples built elaborate sunken courts in the entire Titicaca region. Along with the corporate architecture, a new suite of ritual artifacts was introduced. These include ceramic trumpets, flat-bottomed bowls, and stone carvings (Chávez & Mohr Chávez 1975). In the north basin, the Qaluyu culture flourished from as early as 1300 B.C.E. up to 500 B.C.E. The type site of Qaluyu is a large mound and associated domestic habitation areas that cover at least 7 ha. There are a number of sunken courts on the mound. A stone temple wall was discovered in Qaluyu levels at the site of Pucara, located a few kilometers to the south (Wheeler & Mujica 1981). Other large Qaluyu sites are found in Ayaviri and Putina in the north (Plourde 1999). In short, throughout the Titicaca Basin from 1300 B.C.E. to circa 500 B.C.E., a few peoples in some villages started constructing elaborate court complexes, intensified interregional exchange, and intensified ritual behavior.

Initial Period States?

There is a wide difference of opinion regarding the level of political complexity in the Initial period. According to Pozorski (1987, p. 15) and Pozorski & Pozorski (1994, p. 70), early Initial period Pampa de las Llamas-Moxeke was the center of a "simple theocratic state" with a population of 2500–3000. It was linked to other sites in the Casma valley, placing Pampa de la Llamas-Moxeke at the top of a sitesize hierarchy. They point to numerous elite objects on Huaca A, including turquoise beads, figurines, and textiles, which suggests that this was a palace. They likewise argue that there was both elite- and low-status housing at the site and that the entire settlement was planned. Instead of one single site that can be identified as the first state, they argue that states developed among a number of polities in the Moche, Casma, Supe, and Chillón valleys in the north and central Peruvian coast (Pozorski & Pozorski 1987, p. 45).

Burger (1995, p. 75) views the Initial period as characterized by 20 or so "weakly stratified small-scale societies with highly developed religious institutions."

Burger notes that there is no state architecture typical of known states in the Andes, little evidence of economic specialization, an absence of workshops, and a great deal of variation between settlements. Schreiber (2001) agrees, viewing the Initial period as a time of simple chiefdom development. It is important to emphasize our lack of systematic regional research in the area. In those regions where surveys are conducted, we find dozens of early sites with monumental architecture (e.g. Vega-Centeno et al 1998). In short, the Initial period cultural landscape was populated with thousands of corporate buildings on hundreds of sites of varying sizes and complexity. The evidence suggests the existence of local polities with little regional integration with no single site that can be described as a political center of a multivalley polity.

THE EARLY HORIZON

The Early Horizon dates from circa 900 B.C.E. to 200 B.C.E. and corresponds to the first pan-Andean art style known as Chavín in the central highlands and the coast. This period corresponds to the last half of the Middle Formative (1300–500 B.C.E.) and the early part of the Upper Formative (500 B.C.E. to C.E. 400) in the south central Andes.

The Coast and Central Highlands

There was a widespread collapse of coastal polities just prior to the Early Horizon. Construction of architectural monuments was halted in progress at sites such as Cardal, Mina Perdida, Taukachi-Konkan, Sechín Bajo, Sechín Alto, and Las Haldas (Burger 1995, pp. 183–85; Fung Pineda 1988, p. 89; Greider 1975, p. 101). Likewise, a number of sites with different architectural and pottery styles were established in Casma, such as Pampa Rosario, San Diego, and Chankillo. Chankillo has traditionally been interpreted as a fortress, but some recent interpretations suggest that it served ritual purposes instead. Other unequivocal defensive sites were established throughout the region. In the Santa valley during the Early Horizon, Wilson discovered a number of fortified settlements (1988, p. 100). Some argue for an invasion of highlanders into the coast during the Early Horizon (Pozorski 1987), while others feel that the evidence points to local changes (Burger 1995, p. 189).

In contrast to the coastal cultures, the cultures of the highlands prospered during the Early Horizon. The site of Chavín increased in size and power. Construction at Chavín continued up to at least 400 B.C.E. and possibly two centuries later (Rick et al 1998, p. 208). Regional data suggest an aggregation of the surrounding sites into a 42-ha settlement by 400–200 B.C.E. with a population of 2000–3000 (Burger 1995, p. 168). At 20 times larger than any surrounding settlement, Chavín emerged as a true political center. Exchange with other Andean regions, including the coast, flourished, and there is evidence of the importation of prestige

goods and local economic specialization. The prosperity was not limited to Chavín. Pacopampa, Kotosh, La Pampa, Kuntur Wasi, and other highland sites grew in size and complexity as well (Silverman 1996, p. 120).

The South Central Highlands

From approximately 400 B.C.E. to C.E. 200, the site of Pucara dominated the northern Titicaca Basin. Estimates of the size of Pucara range from 2.0–4.0 km^2 (Erickson 1988). The main architectural feature of Pucara is a series of massive terraces that lead up to a flat area with three, stone-slab–lined, sunken courts. The largest court measures about 16 $\times$ 16 m in size and is 2.2 m deep (Chávez 1988, Kidder 1943). A dense habitation area is located in front of the large terraces. Likewise, there are a number of mounds that most likely held sunken courts as well. Pucara pottery and sculpture show links to contemporary coastal Paracas and Early Tiwanaku, with antecedents in Chavín (Cook 1994, p. 186; Conklin & Moseley 1988; Silverman 1996).

The site of Tiwanaku, located in the southern Titicaca Basin, was occupied at this time as well. We do not know the size and complexity of Upper Formative period Tiwanaku because later constructions covered 4–6 km^2 with temples, pyramids, and other buildings. Limited test excavations at the site suggest that Tiwanaku was probably about as large as Pucara during the Upper Formative, but this remains speculative.

Early Horizon States?

Obviously, for those who view Chupacigarro and Pampa de las Llamas-Moxeke as states, polities such as Chavín and Pucara would be second-generation states. Many argue that the Early Horizon ceremonial centers were centers of regional cults or pilgrimage destinations that, while complex, do not meet the definition of a state society (Burger 1989, pp. 557–60; 1995, pp. 193–200). Schreiber (2001) views the Early Horizon coastal and north highland polities as complex chiefdoms, and Moseley (1992a, p. 159) suggests the existence of two regional political spheres, Chavín in the north and Pucara-Paracas in the south, that dominated the area as oracle centers.

The regional cult model was developed by Silverman using the site of Cahuachi as a case study (1990, 1991). Silverman (1995, p. 27) argues that this Nasca settlement did not have a urban population. She views it as a "complex non-state society or ranked society or chiefdom-level society," but not a state-level organization. This model provides a means by which a large settlement, with substantial architecture, could be constructed in a nonstate context. Burger (1988) likewise argues that the Early Horizon centers could be analogous to the historically documented pilgrimage center at Pachacamac. In the pilgrimage center model, many of the surface attributes of state organization can exist—large centers, widespread distribution of art styles, and so forth—without the actual socioeconomic hierarchies that anthropologists see as central to state organization.

THE EARLY INTERMEDIATE AND MIDDLE HORIZON

A poorly understood culture that is known as Gallinazo developed on the north coast during the Early Intermediate period. In the Virú valley, the Gallinazo Group was a town of several thousand people (Bawden 1999, p. 187). There was a substantial Gallinazo occupation in the Moche valley as well. Gallinazo is usually believed to antedate the Moche, although some evidence suggests at least some chronological overlap between the two (Bawden 1999, p. 190). With large settlements, impressive platform pyramids, extensive agricultural systems, and the like, some scholars have argued that Gallinazo was in fact a state-level society (e.g., Fogel 1993). Certainly, many of the cultural patterns seen in the Moche culture have direct antecedents to Gallinazo.

The Coastal Moche

In the north coast, the late Early Intermediate period Moche culture developed as a multivalley political entity by the fourth century C.E. (Bawden 1999; Shimada 1994, p. 95; Wilson 1988). The capital of the Moche polity is located in the Moche valley at the site of Moche. It is dominated by two main pyramids—the Huaca del Sol and Huaca de la Luna. The largest of these two, the Huaca del Sol, measures about 160 × 340 m in size and stands 40 m in height. It was one of the largest prehispanic monuments constructed in the Western Hemisphere. The Moche capital is unequivocally an urban settlement, perhaps the first true city in the Andes. It is characterized by a system of streets, canals, plazas, architectural groups, areas of craft specialization, and so forth (Uceda & Mujica 1998).

Moche-related sites are found throughout the north coast. Some scholars have suggested that there were two Moche spheres, a northern and a southern (Shimada 1994). The famous site of Sipán in the northern valley of Lambayeque contained one of the most elaborate Moche burials yet discovered. The date of the Lord of Sipán burial is early in Moche culture, around C.E. 150–200, which suggests the simultaneous emergence of elite centers of power that shared Moche iconography. Bawden provides a map of the early and middle Moche polity that suggests a discontinuous territory until Moche V, again reinforcing the notion of a simultaneous rise of the state culminating in Moche as its capital.

The South Central Highlands

The Upper Formative period site of Pucara ended as a political center no later than C.E. 400. Around C.E. 600, the Tiwanaku state began an aggressive expansion out of the southern Titicaca Basin. The site of Tiwanaku is a vast, planned urban capital that sprawled over the altiplano landscape in the southern Titicaca Basin. At its height in C.E. 800–900, Tiwanaku boasted an impressive architectural core of pyramids, temples, palaces, streets, and state buildings. Surrounding the core of the capital was an urban settlement of nonelite artisans, laborers, and farmers who lived in adobe structures up and down the valley (Janusek 1999). Current estimates suggest that the total urban settlement covers 4–6 km^2 in area, with a population

in the Tiwanaku valley ranging from 30,000 to 60,000 (Janusek 1999, Kolata & Ponce 1992). Large areas of intensified agricultural production are associated with Tiwanaku and pre-Tiwanaku populations around the basin (Erickson 1988, Kolata 1986, Stanish 1994). The combined population of these settlements and the capital itself would have been quite substantial at the height of the Tiwanaku state, possibly reaching 100,000 people in the Tiwanaku and adjacent Katari valleys.

Tiwanaku artifacts and colonies are found throughout the circum-Titicaca basin and beyond. A well-documented Tiwanaku colony is found in Moquegua (Goldstein 1993). In the Cochabamba region of Bolivia, Anderson & Cespedes Paz (1998) argue for a Tiwanaku colony (but see Higueras-Hare 1996). Probable colonial areas have been identified in the Larecaja region of Bolivia (Faldín 1990), the Arequipa area, and Azapa (Goldstein 1995/1996). Recent settlement archaeology in the Titicaca Basin suggests that the Tiwanaku selectively controlled areas throughout the region. Tiwanaku did not, or could not, practice a small version of Inca statecraft by incorporating large, contiguous areas. Rather, it appears to have controlled economically and militarily strategic areas, including roads, rich agricultural areas, and resource-rich zones.

The Central Highlands

The site and culture of Wari represent an autochthonous expansive state that emerged in the middle of the first millennium C.E. in the central highlands roughly parallel in time to Tiwanaku. The capital site contains about 200 ha of stone architecture and another 300 ha of domestic residence around this architectural core (Schreiber 1987; 1992, p. 80). Up to 15 km^2 of site area has been cited as being part of the Wari urban complex (Isbell et al 1991, Schreiber 2001). The proportion of core architecture to domestic, nonelite architecture, and the overall size of the site is quite similar to contemporary Tiwanaku.

Wari stretches from the Cuzco area in the south to Cajamarca in Middle Horizon 1B (Schreiber 1992, p. 77). There are several provincial Wari settlements. Pikillacta, located near Cuzco, is built on a grid, has 700 individual structures, is 2 km^2 in size, and is the center of intrusive garrisons of Wari settlements in the Lucre valley (McEwan 1991, p. 93–100). Likewise, the site of Jincamocco in the Carhuarazo valley represents an intrusive Wari settlement that differs from local sites based on size, artifact inventory, and architectural plan (Meddens 1991; Schreiber 1992, p. 165). Like Pikillacta, the main enclosure was laid out as a single unit. The site conforms to Wari architectural canons with large, subdivided compounds of patios surrounded by peripheral galleries inside a single, large, and well-defined rectangular enclosure with a thick outer wall (Schreiber 1992, p. 200). These and other Wari sites indicate a rigidity of overall plan in Wari provincial architecture.

The Early Intermediate and Middle Horizon States?

The consensus in the archaeological literature is that states existed in the Andes by the middle of the first millennium C.E. (e.g. Berdichewsky 1995/1996, Flannery

1995, 1998, Isbell 1987, Lumbreras 1999, Marcus 1998). For the first time in the Andes, as represented by Moche, we have unequivocal evidence of royal tombs built in restricted-access temples, clear economic specialization, the existence of a road system, palaces, a warrior-based elite, a regional polity beyond a single valley, and a fully urbanized capital. Likewise both Wari and Tiwanaku have palaces, planned urban capitals, high populations, evidence of socioeconomic classes, site-size hierarchies, expansionist policies, agricultural intensification, economic specialization, and colonial enclaves. The state originated in Moche, Wari, and Tiwanaku in the first half of the first millennium C.E.

SOUTH AMERICA IN COMPARATIVE CONTEXT

Two assumptions about the nature of Andean culture and history underlie archaeological research in the region. One position views the Andes as culturally and historically unique. The position was developed as a coherent theory by Murra (1968, 1972) and continues to hold considerable influence, particularly among ethnohistorians and ethnographers. This body of theory is known as "verticality" or "zonal complementarity." The basic principle behind this theory is that the "vertical" stratification of ecological zones in the Andes has affected the political and economic strategies of the pre-Hispanic populations. It furthermore assumes that this is unique to the Andes and, as such, has promoted the development of a culture understandable only in its own terms.

According to verticality models, people strategically locate colonies to control a diverse set of ecological zones even in nonstate contexts. This geographical pattern allows the "complementary" ecozones to be exploited by a single group or polity. Hypothetically, the resulting distribution of colonies creates an archipelago of isolated landholdings over a number of ecological zones. The overlap of archipelagos results in a complex patchwork of different ethnic groups and political units, creating a socioeconomic system unique to the Andes. Recent work suggests that this perspective is not supportable. Throughout the world where the geography is characterized by a close juxtaposition of different ecological zones, complex polities have secured economic access by similar strategies.

The opposing perspective assumes that much of Andean history can be understood as an example of anthropological processes typical of all human societies. From this perspective, the Andes provides a rich corpus of data to refine our models of the evolution of state societies. It provides a number of parallels and contrasts to other areas of first-generation state development.

Geography

One difference stands out between the Andes and other areas of first-generation state evolution. The Andean cultural area, defined conservatively as the limits of the Inca state in 1532, is exceptionally long and covers a very rugged territory. It stretches for over 4000 km up and down western South America. To place this in

context, this is about the same distance east-west from the Nile to the Indus river, an area that covers three regions of pristine state development in the Old World (including Mesopotamia).

Given the vast distances in the Andean cultural area, a legitimate question can be raised as to whether we should view western South America as having not one but three different areas of first-generation state development represented by Moche, Wari, and Tiwanaku. Perhaps the very notion of "pristine" state development must be challenged, and instead we should find a better control for the relative degrees of cultural autonomy in the formation of archaic states around the world.

Political and Economic Structure

The argument that there were state societies prior to the Middle Horizon is weak. In particular, we can point to the lack of evidence of state-level regional integration prior to Moche. The model that best characterizes the pre–Middle Horizon political landscape is a series of autonomous and semiautonomous polities without any evidence of complexity beyond that of a chiefdom society.

In contrast, the Moche, Tiwanaku, and Wari polities are similar to other first-generation states around the world. There is good evidence for the replication of distinctive artistic, mortuary, and architectural styles in distant regions. Unlike earlier periods there is unequivocal evidence for an urbanized capital city. Marcus & Flannery's (1996) description of Uruk and Teotihuacán can also be used to characterize these Andean state polities: the existence of "hyperurban" capital cities, "direct control of an irregular and noncontiguous territory, and distant 'colonies' or 'enclaves.'"

Moche, Tiwanaku, and Wari also exhibit classic site-size hierarchies typical of first-generation states. Albarracin-Jordan (1996) and McAndrews et al (1997) demonstrate a four-tiered site-size hierarchy for Tiwanaku in its core territory. Using more flexible criteria, a six-tiered one is noted in a nearby provincial territory (Stanish et al 1997). Isbell & Schreiber (1978) argue for a four-tiered hierarchy for Wari. For a major Moche area, Wilson (1988, p. 336) defines a hierarchy of sites that includes five tiers. In all cases, the number of site-size tiers is greater than the preceding periods, which suggests a differentiation of the settlement pattern and administrative complexity at the time of state formation.

Population Sizes

The population estimates for Initial period or Early Horizon sites such as Pampa de las Llamas-Moxeke and Chavín are quite low, around 2000–3000. In contrast, estimates for the later polities such as Moche, Wari, and Tiwanaku are higher, with published populations in the 50,000–200,000 range (Kolata 1993, Schreiber 1992).

Johnson & Earle (1987, pp. 230–46) and Earle (1997) offer baseline data on chiefdom and state demographics at the high end of the literature. Simple chiefdoms have population levels in the low thousands to tens of thousands. Complex

chiefdoms, at least in Hawaii, have populations between 30,000 and 100,000, while states number in the hundreds of thousands to millions. At the other end, Renfrew (1982) has suggested that some small states have as few as 2000 people. Feinman & Neitzel (1984), using comparative data from the Americas, note that almost all middle-range societies have a maximum of 31,000 people. An intermediate estimate by Baker & Sanders (1972) suggests a figure of 48,000 as the threshold between chiefdoms and states. In this regard, the population estimates for hypothesized state societies in the Initial and Early Horizon periods is at the very low end of population estimates for archaic states from around the world. The demographic size proposed for the Middle Horizon polities is more consistent with the average populations estimates in the literature.

Circumscription and Population Pressure

The Pacific coastal valleys can be viewed as incredibly rich "linear oases" that pierce a virtually uninhabitable desert. These valleys occur at somewhat regular intervals that average around 30 km and constitute classic examples of a circumscribed environment. The highlands and altiplano, in contrast, are far less circumscribed. In particular, camelid pastoralism is not restricted to narrow zones but can be practiced over a very wide area. Unlike the coast, populations had alternatives to a single, rich, and restrictive ecological zone.

Systematic surveys provide data on population growth and densities. Earle (1997, p. 65) notes that in Mantaro valley, ". . . the populations . . . expanded and declined in erratic cycles that were not evidently related to resource conditions," a pattern similar to two other case studies he cites in Denmark and Hawaii. The data fit the circumscription model only after the Wari state developed. In the Titicaca Basin, there is a pattern of very slow, continuous growth with a spike in Inca period (Albarracin-Jordan & Mathews 1990, Stanish et al 1997). The data from these two highland areas support a political economic model (Earle 1987; 1997, p. 119), as opposed to strict population pressure models. Likewise, even on the coast, there remains little evidence of direct population pressure. Wilson (1988, p. 357), for instance, notes that in the Santa valley, "there is little evidence of population pressure *per se* in the pre-state systems . . .," although he goes on to suggest that it may have been a factor in other valleys.

In spite of the circumscribed nature of the coastal environment, there is little evidence for direct population pressure as a factor in state development. This also appears to be the case in the highlands. In short, localized population pressure does not appear to be a sufficient or necessary cause in Andean state formation. However, at a regional level, there are correlations between population size and state formation that remain subject to future testing.

Conflict and Warfare

Intergroup conflict is recognized as one of the key factors in the development of political complexity (e.g., Marcus & Flannery 1996, p. 157; Redmond 1994).

Warfare is present on the Andean coast from at least the Early Horizon. Wilson (1999) argues that conflict was present in the Santa valley from the Early Horizon until the development of Moche. Pozorski (1987) agrees that warfare was central to the formation of the first states in Santa and Nepeña but argues that in Casma, little conflict preceded the development of the first "theocratic" states. Conflict does occur later on in the Casma with the arrival of a "secular, militaristic state" around 1000 B.C.E. (Pozorski 1987). Therefore, if Pampa de las Llamas-Moxeke is considered to be an Initial period state, then warfare was not a factor. If, however, the state did not develop until the late Early Intermediate period, then conflict indeed was a factor in the rise of the state in the Casma valley as well. Iconographic evidence and physical remains unequivocally indicate that conflict and human sacrifice, probably of prisoners, was common in Moche society (Bourget 1997; Donnan & McClelland 1999; Verano et al 1999).

There is little doubt that militarism was a major strategy in Moche expansion on the coast. In the Santa valley, Wilson (1988, p. 333) and Shimada (1987) argue for a military conquest by the Moche displacing the earlier Gallinazo populations. Defensive architecture is common on Moche period sites throughout the north coast.

In the highlands, Earle (1997, p. 119) notes that warfare began early in the Mantaro valley, subsided with the Wari conquest, then increased again prior to Inca conquest. In the Titicaca region, evidence of conflict and the development of complex chiefly society are strongly correlated. In the Early and Middle Formative periods, there is little evidence of conflict. Then, in the Upper Formative, many sites were located in defensive positions (but see Topic & Topic 1987), and there is a pronounced introduction of trophy head and other militaristic iconography on stone stelae and pottery.

Wealth Finance

D'Altroy & Earle (1985) and Earle (1997) argue that central to development of complex society is the creation of a system of finance for state political economies. The key factors include the existence of surplus-producing subject peoples and potential efficiency in production. From this perspective, the emergence of archaic states in South America can be understood as a conjunction of favorable environmental zones in a context of gradual population growth. Population spikes tend to occur after state development, not before. The areas where states first developed have the greatest capacity for sustained demographic increase and the intensification of production. As a general rule, the north coast rivers where states took root are large, while the south coast rivers are not. The few exceptions support the rule; large southern rivers tend to be deeply entrenched and provide less opportunity for irrigation, while smaller northern rivers are connectable by intervalley canals.

As mentioned above, perhaps some of the richest areas in South America are found on the north Peruvian coast where these large rivers discharge into the sea. Here, the rich riverine resources are combined with the marine resources in the delta

areas. In the highlands, there are many productive zones outside of the Titicaca Basin and north central highlands. However, it is in these two areas where a suite of highly productive natural features combine. The Lake Titicaca region has the lake itself, vast grasslands, rivers, and relatively close access to the eastern slopes. The use of raised fields near the lake provide the capacity for agricultural intensification, a technique not available in other areas of the highlands. In the north central Andes, the availability of irrigable land is often cited as one of the primary factors in the development of complexity and the state in the Andes. Likewise, the highland areas have access to pasture lands, rivers, and the eastern slopes. All three cases of Moche, Tiwanaku, and Wari state formation are correlated with agricultural intensification, intensification of exchange relationships, and intensification of commodity production, observations that conform to the wealth finance model.

Dynamic Cycling

Marcus (1992, 1993) and Marcus & Flannery (1996) have proposed a dynamic model of episodic expansion and collapse of archaic states. State polities emerge through the incorporation of other groups, creating at least a four-tiered hierarchy of settlement. As one polity peaks and begins to break down, former lower-level settlements regain their autonomy, after which the process of consolidation, expansion, and dissolution continues again (Marcus 1998). This model works not only for the Maya area, where it was originally proposed, but can be successfully used in many areas of state development around the world, including the Andes.

Data from the Andes support this model. In the Titicaca Basin, Tiwanaku developed after a period of Pucara contraction. After the Tiwanaku collapse, smaller Aymara-speaking polities developed throughout the area. Over a 1500-year period, polities expanded and contracted for four cycles, ending with the Inca conquest of the region. Likewise, in the north coast, regional research by Billman (1999) and Wilson (1988) outline a series of valleys and peaks beginning before the emergence of the Moche state.

Summary

South America provides an excellent case study for defining the processes of first-generation state formation. The data indicate that several factors were significant, including competition and war, high resource concentration in circumscribed environments, interregional exchange, the materialization of elite ideologies, and ecological conditions conducive to population increases. Factors that do not appear to be significant include local population pressures in circumscribed environments, direct control of irrigation, or other agricultural technologies by an elite. Localized population spikes appear after the development of state societies. Irrigation systems long predate the development of states. Moche, Wari, and Tiwanaku are not organizationally identical. There is virtually no evidence for any direct links between Tiwanaku and Moche, except for the most superficial of iconographic data. There are greater links between Moche and Wari, but these are largely iconographic

as well and related to the fact that Wari seems to have had some political access to former Moche territory. Moche culture emphasized platform mounds with continual rebuilding, probably on the accension of a new ruler or dynasty. Elaborate elite burials are found in these pyramids. In contrast, we have yet to define a significant elite burial in Tiwanaku. Likewise, the focus of political ritual appears to be the "kalasasayas" (stone enclosures) and sunken courts, and not the pyramids themselves in Tiwanaku. The highlands and coast have different evolutionary trajectories, based in large part on the nature of resource distribution and availability and political finance (T. Earle, personal communication). In general, models that incorporate dynamic cycling and political economic theoretical frameworks best explain the evolution of the state in western South America.

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LITERATURE CITED

Albarracin-Jordan J, Mathews JE. 1990. *Asentamientos Prehispánicos del Valle de Tiwanaku*, Vol. 1. La Paz: Producciones CIMA

Albarracin-Jordan J. 1996. *Tiwanaku. Arqueología regional y dinámica segmentaria*. La Paz: Editores Plural

Anderson K, Cespedes Paz R. 1998. *Late Formative to Middle Horizon transition in Cochabamba, Bolivia*. Presented at Annu. Meet. Soc. Am. Archaeol., Seattle, WA

Baker P, Sanders W. 1972. Demographic studies in anthropology. *Annu. Rev. Anthropol.* 1:151–78

Bandy M. 1999. Systematic surface collection. See Hastorf 1999, pp. 23–26.

Bawden G. 1999. *The Moche*. Cambridge, UK: Blackwell

Bennett W. 1946. The Andean highlands: an introduction. In *Handbook of South American Indians, the Andean Civilizations*, ed. J Steward, 2:1–60. Washington, DC: Smithsonian Inst.

Berdichewsky B. 1995/1996. Surgimiento y caracter del estado Andino. *Diálogo Andino* 14/15:75–96

Billman B. 1999. Settlement pattern research in the Americas. Past, present, and future. In *Settlement Pattern Studies in the Americas. Fifty Years since Virú*, ed. B Billman, G Feinman, pp. 1–5. Washington, DC: Smithsonian Inst.

Bonavia D, Grobman A. 1979. Sistema de depósitos y almacenamiento durante el periodo precerámico en la costa del Perú. *J. Soc. Am.* 66:21–45

Bonnier E, Rozenberg C. 1988. Del santuario al caserío. Acerca de la neolitización en la Cordillera de los Andes centrales. *Bull. Inst. Fran. d'etudes And.* 17(2):23–40

Bourget S. 1997. La colère des ancêtes: découverte d'un site sacrificie à la Huaca de la Luna, vallé de Moche. In *À L'Ombre du Cerro Blanco, Nouvelles Découvertes dur la Culture Moche, Côte Nord du Pérou*, ed. C Chapdelaine, pp. 83–99. Montréal: Cah. Anthropol. 1, Univ. Montréal, Dép. Anthropol.

Burger R. 1988. Unity and heterogeneity within the Chavín horizon. See Keatinge 1988, pp. 99–144

Burger R. 1989. El horizonte Chavín: quimera estilística o metamorfosis socioeconómica? *Rev. And.* 7(2):543–73

Burger R. 1995. *Chavín and the Origins of Andean Civilization*. New York: Thames Hudson

Burger R, Burger LS. 1980. Ritual and religion at Huaricoto. *Archaeology* 33(6):26–32

Carrión Sotelo L. 1998. Excavaciones en San Jacinto, templo en U en el valle de Chancay. *Bol. Arq. PUCP* 2:239–50

Chávez K. 1988. The significance of Chiripa in Lake Titicaca Basin developments. *Expedition* 30(3):17–26

Chávez SJ, Mohr Chávez KL. 1975. A carved stela from Taraco, Puno, Peru and the definition of an early style of stone sculpture from the altiplano of Peru and Bolivia. *Ñawpa Pacha* 13:45–83

Conklin WJ. 1996. La arquitectura de la Huaca de Los Reyes. *Arkinka* 10:88–100

Conklin WJ, Moseley ME. 1988. The patterns of art and power in the Early Intermediate Period. See Keatinge 1988, pp. 145–63

Cook AG. 1994. *Wari y Tiwanaku: entre el estilo y la imagen*. Lima: Pont. Univ. Católica Peru Lima

D'altroy T, Earle T. 1985. Staple finance, wealth finance, and storage in the Inka political economy. *Curr. Anthropol.* 26(2):187–206

DeMarrais E, Castillo LJ, Earle T. 1996. Ideology, materialization, and power strategies. *Curr. Anthropol.* 37:15–31

Dillehay TD. 1992. Widening the socioeconomic foundations of Andean civilizations: prototypes of early monumental architecture. *Andean Past* 3:55–65

Donnan C, ed. 1985. *Early Ceremonial Architecture in the Andes*. Washington, DC: Dumbarton Oaks

Donnan C, McClelland D. 1999. *Moche Fineline Painting: its Evolution and its Artists*. Los Angeles: Fowler Mus. Cult. Hist.

Earle T. 1987. Specialization and the production of wealth: Hawaiian chiefdoms and the Inka empire. In *Specialization, Exchange, and Complex Societies*, ed. EM Brumfiel, TK Earle, pp. 64–75. Cambridge, UK: Cambridge Univ. Press

Earle T. 1997. *How Chiefs Come to Power: the Political Economy in Prehistory*. Stanford, CA: Stanford Univ. Press

Engel F. 1987. *De las begonias al maíz. Vida y producción en el Perú antiguo*. Lima: Univ. Nac. Agrar. Molina

Erickson C. 1988. Raised field agriculture in the Lake Titicaca Basin. *Expedition* 30(3):8–16

Faldín A JD. 1990. La provincia Larecaja y el sistema precolombino del norte de La Paz. In *Larecaja, Ayer, Hoy y Mañana*, pp. 73–90. La Paz: Com. Cult.

Feinman G, Neitzel J. 1984. Too many types: an overview of sedentary prestate societies in the Americas. *Adv. Archaeol. Theory Method* 7:39–102

Feinman G, Marcus J, eds. 1998. *Archaic States*. Santa Fe, NM: Sch. Am. Res.

Feldman R. 1987. Architectural evidence for the development of nonegalitarian social systems in coastal Peru. See Haas et al 1987, pp. 9–14

Flannery KV. 1995. Prehistoric social evolution. In *Research Frontiers in Anthropology*, ed. M Ember, pp. 1–26. Englewood Cliffs, NJ: Prentice Hall

Flannery KV. 1998. The ground plans of archaic states. See Feinman & Marcus 1998, pp. 15–57

Flannery KV. 1999. Process and agency in early state formation. *Cambridge Arch. J.* 9:(1):3–21

Fogel JA. 1993. *Settlements in time: a study of social and political development during the Gallinazo occupation of the north coast of Peru*. PhD diss. Yale Univ., New Haven, CT

Fung Pineda R. 1988. The late Preceramic and Initial period. See Keatinge 1988, pp. 67–96

Goldstein P. 1993. Tiwanaku temples and state expansion: a Tiwanaku sunken-court temple in Moquegua, Peru. *Lat. Am. Antiq.* 4(1):22–47

Goldstein P. 1995/1996. Tiwanaku settlement patterns of the Azapa Valley, Chile. New data, and the legacy of Percy Dauelsberg. *Diálogo Andino* 14/15:57–73

Grieder T. 1975. A dated sequence of building and pottery at Las Haldas. *Ñawpa Pacha* 13:99–112

Grieder T. 1988. Burial patterns and offerings. See Grieder et al, 1988a, pp. 73–102

Grieder T, Bueno Mendoza A. 1985. Ceremonial architecture at La Galgalda. See Donnan 1985, pp. 93–109

Grieder T, Bueno Mendoza M, Smith CE Jr, Malina RM, eds. 1988a. *La Galgada, Peru. A Preceramic Culture in Transition*. Austin: Univ. Texas Press

Grieder T, Bueno Mendoza M, Smith CE Jr, Malina RM. 1988b. La Galgada in the world of its time. See Grieder et al 1988a, pp. 192–203

Guffroy J. 1989. Un centro ceremonial formativo en el Alto Piura. *Bull. Inst. Fran. d'etudes And.* 18(2):161–207

Haas J. 1987. The exercise of power in early Andean state development. See Haas et al 1987, pp. 31–35

Haas J, Pozorski S, Pozorski T, eds. 1987. *The Origins and Development of the Andean State*. Cambridge, UK: Cambridge Univ. Press

Hastorf C, ed. 1999. *Early Settlement at Chiripa, Bolivia*. Berkeley: Contrib. Univ. Calif. Archaeol. Res. Facil.

Higueras-Hare A. 1996. *Prehispanic settlement and land use in Cochabamba*. PhD diss. Univ. Pittsburgh, Pittsburgh, PA

Isbell W. 1987. State origins in the Ayacucho Valley, central highlands, Peru. See Haas et al 1987, pp. 83–90

Isbell W, Brewster-Wray C, Spickard L. 1991. Architecture and spatial organization at Huari. See Isbell & McEwan 1991, pp. 19–53

Isbell W, McEwan G, eds. 1991. *Huari Administrative Structure: Prehistoric Monumental Architecture and State Government*. Washington, DC: Dumbarton Oak

Isbell W, Schreiber K. 1978. Was Huari a state? *Am. Antiq.* 43:372–89

Izumi S, Terada K. 1972. *Andes 4: Excavations at Kotosh, Peru, 1963 and 1966*. Tokyo: Univ. Tokyo Press

Janusek JW. 1999. Craft and local power: embedded specialization in Tiwanaku cities. *Lat. Am. Antiq.* 10(2):107–31

Johnson A, Earle TK. 1987. *The Evolution of Human Society*. Stanford, CA: Stanford Univ. Press

Keatinge R, ed. 1988. *Peruvian Prehistory*. Cambridge, UK: Cambridge Univ. Press

Kidder A II. 1943. *Some Early Sites in the northern Lake Titicaca Basin*. Pap. Peabody Mus., Harvard Univ.:1

Kolata A. 1986. The agricultural foundations of the Tiwanaku state: a view from the heartland. *Am. Antiq.* 51(4):748–62

Kolata A. 1993. *The Tiwanaku*. London: Blackwell

Kolata A, Ponce S C. 1992. Tiwanaku: the city at the center. In *The Ancient Americas*, ed. R Townsend, pp. 317–33. Chicago: Art Inst. Chicago

Lumbreras LG. 1981. *Arqueología de la América Andina*. Lima: Editorial Milla Batres

Lumbreras LG. 1999. Andean urbanism and statecraft (CE 550–1450). In *The Cambridge History of the Native Peoples of the Americans,: South America, Part 1*, Vol. 3, ed. F Salomon, SB Schwartz, pp. 518–76. Cambridge, UK: Cambridge Univ. Press

Marcus J. 1992. Dynamic cycles of Mesoamerican states: political fluctuations in Mesoamerica. *Natl. Geog. Res. Explor.* 8:392–411

Marcus J. 1993. Ancient Maya political organization. In *Lowland Maya Civilization in the Eighth Century A.D.*, ed J Sabloff, J Henderson, pp. 111–83. Washington, DC: Dumbarton Oaks

Marcus J. 1998. The peaks and valleys of ancient states: an extension of the dynamic model. See Feinman & Marcus 1998, pp. 59–94

Marcus J, Flannery K. 1996. *Zapotec Civilization: How Urban Society Evolved in Mexico's Oaxaca Valley*. London: Thames Hudson

McAndrews T, Albarracin-Jordan J, Bermann B. 1997. Regional settlement patterns in the

Tiwanaku Valley of Bolivia. *J. Field Arch.* 24:67–83

McEwan G. 1991. Investigations at the Pikillacta site: a provincial Huari center in the valley of Cuzco. See Isbell & McEwan 1991, pp. 93–119

Meddens F. 1991. A provincial perspective on Huari organization viewed from the Chicha/Soras Valley. See Isbell & McEwan 1991, pp. 215–31

Moseley ME. 1975. *The Maritime Foundations of Andean Civilization*. Menlo Park, CA: Cummings

Moseley ME. 1985. The exploration and explanation of early monumental architecture in the Andes. See Donnan 1985, pp. 29–57

Moseley ME. 1992a. *The Incas and their Ancestors*. London: Thames Hudson

Moseley ME. 1992b. Maritime foundations and multilinear evolution: retrospect and prospect. *Andean Past* 3:5–42

Murra JV. 1968. An Aymara Kingdom in 1567. *Ethnohistory* (15):115–51

Murra JV. 1972. El'control vertical' de un máximo de pisos ecológicos en la economía de las sociedades Andinas. In *Visita de la Provincia de León de Huánuco en 1562. Documentos por la Historia y Etnología de Huánuco y la Selva Central* 2:427–76. Huánuco: Univ. Nac. Hermilio Valdizan

Plourde A. 1999. *The role of inter-regional exchange in Pucara and Tiwanaku state formation and expansion, northeastern Titicaca Basin, Perú*. Presented at the Annu. Meet. Soc. Am. Arch., Chicago, IL

Pozorski S. 1987. Theocracy vs. militarism: the significance of the Casma Valley in understanding early state formation. See Haas et al 1987, pp. 15–30

Pozorski S, Pozorski T. 1994. Early Andean cities. *Sci. Am.* 270(6):66–72

Pozorski T, Pozorski S. 1987. Chavin, the Early Horizon and the Initial Period. See Haas et al 1987, pp. 36–46

Pozorski T, Pozorski S. 1990. Huaynuná, a Late Cotton Preceramic site on the north coast of Peru. *J. Field Arch.* 17:17–26

Quilter J. 1985. Architecture and chronology at El Paraíso, Peru. *J. Field Arch.* 12:279–97

Quilter J. 1991a. Problems with the late Preceramic of Peru. *Am. Anthropol.* 93:450–54

Quilter J. 1991b. Late Preceramic Peru. *J. World Prehist.* 5:387–438

Quilter J, Ojeda EB, Pearsall DM, Sandweiss DH, Jones JG, Wing ES. 1991. Subsistence economy of El Paraíso, an early Peruvian site. *Science* 251:277–83

Quilter J, Stocker T. 1983. Subsistence economies and the origins of Andean complex societies. *Am. Anthropol.* (85):545–62

Redmond EM. 1994. External warfare and the internal politics of northern South American tribes and chiefdoms. In *Factional Competition and Political Development in the New World*, ed. EM Brumfiel, JW Fox, pp. 44–54. Cambridge, UK: Cambridge Univ. Press

Renfrew C. 1982. Polity and power: interaction, intensification, and exploitation. In *An Island Polity: The Archaeology of Exploitation in Melos*, ed. C Renfrew, M Wagstaff, pp. 264–90. Cambridge, UK: Cambridge Univ. Press

Rick JW, Kembel SR, Mendoza Rick R, Kembel JA. 1998. La arquitectura del complejo ceremonial de Chavín de Huantar: documentación tridimensional y sus implicancias. *Bol. Arq. PUCP* 2:181–214

Samaniego L, Vergara E, Bischof H. 1985. New evidence on Cerro Sechín, Casma Valley, Peru. See Donnan 1985, pp. 165–90

Schreiber K. 1987. Conquest and consolidation: a comparison of the Wari and Inka occupations of a highland Peruvian valley. *Am. Antiq.* 52:266–84

Schreiber K. 1992. *Wari Imperialism in Middle Horizon Peru, Anthropol. Pap. No. 87*. Ann Arbor: Mus. Anthropol. Univ. Mich.

Schreiber K. 2001. The Wari empire of Middle Horizon Peru: the epistemological challenge of documenting an empire without documentary evidence. In *Empires*, eds. S Alcock, T D'Altroy, K Morrison, C Sinopoli, pp. 70–92. Cambridge, UK: Cambridge Univ. Press

Shady R. 1993. Del Arcaico al Formativo en los Andes Centrales. *Rev. And.* 21:103–32

Shimada I. 1987. Horizontal and vertical dimensions of prehistoric states in north Peru. See Haas et al 1987, pp. 130–44

Shimada I. 1994. *Pampa Grande and the Mochica Culture*. Austin: Univ. Texas Press

Silva Santisteban F. 1997. *Desarrollo político en las sociedades de la civilización Andina*. Lima: Univ. Lima

Silverman H. 1990. The Early Nasca pilgrimage center of Cahuachi and the Nasca lines: anthropological and archaeological perspectives. In *The Lines of Nasca*, ed. A Aveni, pp. 209–304. Philadelphia: Am. Phila. Soc.

Silverman H. 1991. The ethnography and archaeology of two Andean pilgrimage centers. In *Pilgrimage in Latin America*, ed. NR Crumrine, A Morinis, pp. 215–28. Westport, CT: Greenwood

Silverman H. 1995. Recent archaeological investigations on the south coast of Peru: critique and prospects. *J. Steward Anthropol. Soc.* 23(1,2):13–41

Silverman H. 1996. The formative period on the south coast of Peru: a critical review. *J. World Prehist.* 10(2):95–146

Stanish C. 1994. The hydraulic hypothesis revisited: a theoretical perspective on Lake Titicaca Basin raised field agriculture. *Lat. Am. Antiq.* 5(4):312–32

Stanish C, de la Vega E, Steadman L, Chávez JC, Frye KL, et al. 1997. *Archaeological Survey in the Juli-Desaguadero Area, Lake Titicaca Basin, Peru*. Fieldiana Anthropol., NS 29. Chicago, IL: Field Mus.

Stanish C, Steadman LH. 1994. *Archaeological Research at the Site of Tumatumani Juli, Peru*. Fieldiana Anthropol., NS 23, Chicago, IL: Field Mus.

Tello JC. 1956. *Arqueología del valle de Casma: culturas Chavín, Santa o Huaylas Yunga, y sub-Chimú*. Pub. Antropol. Arch. "Julio C Tello". Lima: Univ. Nac. Mayor San Marcos

Topic J, Topic T. 1987. The archaeological investigation of Andean militarism: some cautionary observations. See Haas et al 1987, pp. 47–55

Torero A. 1990. Procesos lingüísticos e identificación de dioses en los Andes centrales. *Rev. And.* 8(1):237–63

Uceda S, Mujica E. 1998. Nuevas evidencias para viejos problemas: a manera de introducción. In *Investigaciones en la Huaca de la Luna 1996*, ed. S Uceda, E Mujica, R Morales, pp. 9–16. Trujillo: Facult. Cienc. Soc. Unin. Nac. Lib.

Vega-Centeno R, Villacorta LF, Cáceres LE, Marcone G. 1998. Arquitectura monumental temprana en el valle medio de Fortaleza. *Bol. Arq. PUCP* 2:219–38

Verano JW, Uceda S, Chapdelaine C, Tello R, Paredes MI, Pimentel V. 1999. Modified human skulls from the urban sector of the pyramids of Moche, northern Peru. *Lat. Am. Antiq.* 10(1):59–70

Von Hagen A, Morris C. 1998. *The Cities of the Ancient Andes*. New York: Thames Hudson

Wheeler J, Mujica E. 1981. Prehistoric pastoralism in the Lake Titicaca Basin, Peru 1979–1980 field season. *Natl. Sci. Found. Final Rep.*

Willey GR. 1971. *An Introduction to American Archaeology*, Vol. 2. *South America*. Englewood Cliffs: Prentice Hall

Williams C. 1971. Centros ceremoniales tempranos en el valle de Chillón, Rímac y Lurín. *Apuntes Arqueol.* 1:1–4

Wilson D. 1981. Of maize and men: a critique of the maritime hypothesis of state origins on the coast of Peru. *Am. Antiq.* 83:93–120

Wilson D. 1988. *Prehispanic Settlement Patterns in the Lower Santa Valley, Peru: A Regional Perspective on the Origins and Development of Complex North Coast Society*. Washington, DC: Smithsonian Inst.

Wilson DJ. 1999. *Indigenous South Americans of the Past and Present: an Ecological Perspective*. Boulder, CO: Westview

Wissler C. 1922. *The American Indian*. New York: Oxford Univ. Press.

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