

EVOLVING ARCHAEOLOGICAL  
INTERPRETATIONS OF  
INKA INSTITUTIONS:

Perspectives, Dynamics, and Reassessments

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*ECOLOGY AND CERAMIC PRODUCTION IN AN ANDEAN COMMUNITY.* By Dean E. Arnold. (Cambridge: Cambridge University Press, 1993. Pp. 278. \$64.95 cloth.)

*LUKURMATA: HOUSEHOLD ARCHAEOLOGY IN PREHISPANIC BOLIVIA.* By Marc Bermann. (Princeton, N.J.: Princeton University Press, 1994. Pp. 307. \$59.95 cloth.)

*ANCIENT SOUTH AMERICA.* By Karen O. Bruhns. (New York: Cambridge University Press, 1994. Pp. 424. \$64.95 cloth, \$22.95 paper.)

*INCA COSMOLOGY AND THE HUMAN BODY.* By Constance Classen. (Salt Lake City: University of Utah Press, 1993. Pp. 214. \$29.95 cloth.)

*AGRICULTURE AND THE ONSET OF POLITICAL INEQUALITY BEFORE THE INKA.* By Christine A. Hastorf. (New York: Cambridge University Press, 1993. Pp. 298. \$69.95 cloth.)

*INKA STORAGE SYSTEMS.* Edited by Terry Y. LeVine. (Norman: University of Oklahoma Press, 1992. Pp. 385. \$34.95 cloth.)

*THE INKA EMPIRE AND ITS ANDEAN ORIGINS.* By Craig Morris and Adriana von Hagen. (New York: Abbeville, 1993. Pp. 251. \$50.00 cloth.)

*INCA ARCHITECTURE AND CONSTRUCTION AT OLLANTAYTAMBO.* By Jean-Pierre Protzen. (New York: Oxford University Press, 1993. Pp. 303. \$75.00 cloth.)

*PAMPA GRANDE AND THE MOCHICA CULTURE.* By Izumi Shimada. (Austin: University of Texas Press, 1994. Pp. 323. \$60.00 cloth.)

Scholarly control of things Inka has dramatically increased in the last decade. The set of books under review here are just the most recent additions to the burgeoning set of essential studies that are now beginning to overcrowd even the most generous bookshelf. This set is representative, however, and provides a glimpse of the current state of the art. Included are general syntheses of Andean prehistory as well as site-specific reports, studies focusing on the organizational level of ethnic

groups, and detailed studies on stonemasonry, agricultural crops, storage management, ceramic production, and cosmology. My discussion of these contributions will begin with the broad overviews and then shift to the specific studies on discrete technologies or institutions.

### Syntheses

The most ambitious of these works is Karen Bruhns's *Ancient South America*, which surveys the cultural developments culminating in the Inka Empire by using a continentwide perspective.<sup>1</sup> Given its broad scope, the book should be assessed as a general overview of what is now known about South American prehistory because this volume represents the first continental overview published in English since the studies written by Gordon Willey (1971) and edited by Jesse Jennings (1983). Does the new work offer a good review of the state of South American archaeology? No, as Bruhns herself tells the reader: "This is an extremely general and very incomplete treatment. . . . Moreover, there is not equal coverage of all the continent; the Andes, particularly the central Andes, have been heavily emphasized and all else oriented towards events in this relatively small area" (p. 1). The strong Peruvian orientation of *Ancient South America* makes it a good source for updating the current knowledge of Andean prehistory, but the Amazonian and other eastern continental areas are basically ignored. Jennings's similarly titled *Ancient South Americans* also featured an exclusively Andean focus, which leaves the second volume of Willey's *Introduction to American Archaeology* as still the best English-language source covering all of South America. Bruhns's coverage of the Andes is much better than that achieved by Jennings, however, and goes beyond updating its readers on recent discoveries to fill in the gaps in coverage found in the earlier volume. Bruhns conducted field research in Colombia, Ecuador, and Northern Peru, and not surprisingly, her coverage of these areas excels, while Chile and Bolivia get short shrift.

Bruhns's study attempts to review the entire continent, including evidence from the first arrival of human groups until the Iberian conquistadores landed. As a result, the huge quantity of material is surveyed in essentially descriptive comments. Theoretical dialogues in the discipline and cosmological and ideological aspects of the cultures under discussion are not treated. Although Bruhns briefly reviews the material culture of the early inhabitants, most of her study focuses on cultures existing between roughly 200 B.C. and A.D. 1532. In some senses, the strength of *Ancient South America* is also its weakness because the attempt to provide

1. Archaeologists are becoming increasingly sensitive to charges of "linguistic imperialism" made by local Andean groups. The native site names referred to in this review essay reflect the change in approach: the Hispanicized spelling Huari is now spelled Wari, Tiahanaco is now Tiwanaku, and Inca is now Inka.

coverage of an extended range of data necessarily sacrifices excursions into the wealth of understandings of local developments. The result is a broad, homogenized summary.

Yet as a composite, integrated review of material cultures of the last two millennia in the Central and Northern Andes, *Ancient South America* may be the best English-language work available, despite its uneven coverage of the preceramic period. Bruhns is critical of unsubstantiated claims based on material culture artifacts in chronological contexts, but she does not apply the same standards to ecofacts. For example, claims about modern-looking botanical races of Mesoamerican maize "dating" back to seven thousand years ago in Chile are treated as viable. Some recent advances in interpreting the origins of settled agricultural life and the first kingdoms and states received better coverage in the studies by Michael Moseley (1992) and Richard Burger (1992). But most recent discoveries are at least mentioned by Bruhns. Each time I thought of a new site that might have been missed, review of the text turned up a brief mention.

The organization of Bruhns's *Ancient South America* and that of Craig Morris and Adriana von Hagen's *The Inka Empire and Its Andean Origins* are similar in concept. Both volumes provide individual chapters dealing with the archaeological data, based on the Berkeley chronology of alternating "horizons" and "periods," and each supplements chronology with separate chapters on technology. Bruhns includes chapters on agriculture, ceramics, textiles, metallurgy, transport, and iconography, while Morris and von Hagen include separate chapters on metallurgy, textiles, and music. These two books reflect the trends noted at the outset: work in the Andes is increasing scholarly control over individual cultures in time and space, while special studies are homing in on specific technologies, as in the works to be reviewed on ceramics, stonemasonry, architecture, and storage.

Morris and von Hagen's *The Inka Empire and Its Andean Origins* was stimulated by the planning and installation of the archaeological sections of the Hall of South American Peoples at the American Museum of Natural History in New York City. The book is consequently illustrated with high-quality technicolor plates related to these exhibits. Bruhns comments in her introduction, "An archaeology book really stands or falls on the merit of its illustrations. Facts change; pictures are always useful" (p. xxiii). Based on this standard, the colored plates in *The Inka Empire* are far more useful than the low-contrast black-and-white photos in her book. Morris and von Hagen divided the chronological review between them. Von Hagen covers the cultures up to a.d. 500, and Craig Morris picks up to survey what he considers to be the first empires (Wari and Tiwanaku), which led to the second empire (the Inka), a subject on which he is an acknowledged expert.

Von Hagen does an admirable job of reviewing the new discoveries of Chavín, Moche, and Nasca cultures. Among the arguments she summarizes are three that will be elaborated in discussing the other works under review. The first argument (advanced by Izumi Shimada) is that the Moche or Mochica people, who have been credited by some as the first culture to exhibit many of the features that later characterized the Inka (such as dual social and political organization) may actually have included two separate kingdoms, a northern and a southern realm, as first suggested by Christopher Donnan. The second argument (made by Shimada and Dean Arnold) holds that a countrywide drought believed by some to have occurred circa A.D. 550–600 resulted in major cultural changes in the Central Andes, including reorganization of the Moche and Nasca polities and dramatic expansion of the Wari Empire. The third argument (advanced by Jean-Pierre Protzen) is that the spectacular Inka stonemasonry has Tiwanaku roots. Von Hagen's discussion of metallurgy reminds readers that the Batan Grande metalsmiths, beginning circa A.D. 900, used iron compounds as fluxes to produce copper-arsenic bronzes in such a way that the iron fused with the nonmetallic components of the copper ores as part of the waste-product slag. These iron-bearing wastes have sometimes led casual researchers to conclude that these metalsmiths were actually attempting to smelt iron.

In the second half of *The Inka Empire and Its Andean Origins*, Morris begins with what he views as the first round of Central Andean empires, the Wari and Tiwanaku. These cultures provided the first good evidence of features characteristic of the later Inka Empire, such as the pantheon (sun god, moon goddess, thunder and lightning god), frontier garrison posts, movement of colonists (*mitmaqkuna*), and terraced agriculture. His review of the Wari capital presents evidence of possible dualistic organization and the preeminence of secular concerns in Wari with dividing society into small social units (identified by architectural enclosures) to organize the population more efficiently for economic and political purposes. This practice foreshadowed the Inka pattern of deliberately breaking populations into small decimal-based tribute and labor units. In addition, Morris perceives new social mechanisms that allowed the Wari and Tiwanaku to mobilize and invest large numbers of laborers in reclamation and public works projects. These undertakings greatly enhanced production and the state's ability to mobilize surpluses, again foreshadowing similar Inka institutions. According to Morris, the Tiwanaku (in contrast to the secular tendencies of the Wari) focused much more on grandiloquent architecture, leading to what he terms "a theater state" in which architecture and cosmology were associated with large-scale public rituals.

Morris views the period immediately preceding the Inka realm as one of power conflicts between several kingdoms, and he discusses the Chimú at length. He identifies two provincial capitals: Farfan in Jequete-

peque, associated with the first expansion between A.D. 1100 and 1350, a period when the main concern was apparently securing raw materials for Chan Chan; and Manchan in Casma, associated with the second expansion after A.D. 1350, when the economic policy shifted to managing craft production. Regarding late Chimor, Morris perceives a correlation between economic expansion by capturing the production of skilled craft workers (such as the Sican metalsmiths) and abandonment of some canals and agricultural lands around Chan Chan.

Many of the institutions that researchers identify as Inka can now be shown to have much earlier Central Andean roots, and several of these are identified explicitly in the work by van Hagen and Morris. Morris provides an excellent summary of recent Inka archaeology, including his own extensive studies of the Inka.

A useful separate chapter in *The Inka Empire and Its Andean Origins* is Peter Kvietok's review of the origins and range of music and musical instruments in Peru. Musical instruments have been recovered that are at least fifty-seven hundred years old, with the pairing of wind instruments and percussion membranophones and idiophones in rituals dating back several millennia. Kvietok believes that the Aymara preferred wind instruments, while the Quechua preferred membranophones, suggesting another tool for archaeologists to differentiate precontact ethnic groups. This history of music also provides a fruitful basis for exploring the dualistic linkages between auditory and visual symbols noted in Constance Classen's *Inca Cosmology and the Human Body*.

In *Pampa Grande and the Mochica Culture*, Izumi Shimada chases the elusive Peruvian chimera of the pristine Andean state. His study joins that of Richard Burger on the Chavín (1992) as a significant new kind of Andean scholarship. Excellent earlier studies have been made of the Moche or Mochica, like those by Christopher Donnan (1976) and Elizabeth Benson (1972), but they were based mainly on analysis of the tremendous corpus of Moche ceramics and the themes, institutions, and pantheons depicted on these objects. Shimada's *Pampa Grande* demonstrates the same strengths as Burger's recent synthesis on Chavín (reviewed in Browman 1994). Shimada has integrated all available scholarship on the Moche, particularly on their architecture, using Pampa Grande as the foil for elaborating the evolution of Mochica polities. He focuses deliberately on noniconographic, nonrepresentational materials, noting that his study is intended to add to the art historical approach rather than to replace it.

Developing a suggestion first made by Donnan (and commented on by von Hagen), Shimada goes to great lengths to demonstrate that two separate and distinct Mochica polities existed: a northern one centered in Lambayeque and a southern one based in Moche, each with allied local polities. To differentiate clearly between material culture attributes such as ceramics and the realities of political and economic power, Shimada

employs the term *Mochica* for the political manifestations and uses *Moche* for the ceramic style and phases. Hence he argues for politically separate northern and southern Mochica polities that nevertheless may have shared components of the same ceramic style, characterized by the same temporal units based on ceramic assemblages. Shimada details parallel but separate developments in the Lambayeque Valley and Moche Valley polities during Moche Phases 1, 2, and 3, with the southern polity eclipsing the northern area in Moche 4, and a shift of political power to Pampa Grande in Moche Phase 5. His clear differentiation between these two Mochica polities and their shifting fortunes goes a long way toward propelling Peruvian prehistory from being a mere catalog of successive ceramic styles into a dynamic and exciting political history.

The candidate for the first possible state in the Andes continues to intrigue archaeologists. Although most researchers intuitively feel that they know what a state is, definitions vary. Generally, they emphasize scale and complexity, considering such features as bureaucracy, centralized political authority with coercive force, hereditary inequality as manifested in class and social hierarchy, labor specialization, and mechanisms of institutional finance. Burger (1992) argued that the sierra center of Chavín de Huántar, in the Janabarriu phase, offered evidence of becoming the first state by 400 B.C. Moseley (1992) believes that the coastal Moche site during Moche Phase 4 (circa A.D. 400–500) was the first Andean state. And now Morris (in *The Inka Empire*) appears to favor the highland Wari center during Middle Horizon Phase 1A (circa A.D. 550) as the first culture exhibiting the basic outlines of a state. The question of where and when the state first occurred colors scholarly reconstructions of the evolution of the later Inka state. Shimada observes, “One of the basic claims of this book is that Pampa Grande constituted a short-lived Moche V urban capital that emerged under unique cultural and natural conditions, and that the exigencies of its rapid establishment spawned a new socio-political order—the state” (p. 135). He argues that no settlement before Pampa Grande provides convincing evidence of having been a state, and hence he places the origins later than Burger’s Chavín or Moseley’s Moche Phases 3–4 religious center but earlier than Wari, the candidate for “the pristine state” favored by many of the researchers working in the highlands rather than on the coast. Highland experts would concede Pampa Grande as a state capital, but they perceive it as evolving as a result of stimulus diffusion of Wari ideas. Shimada comments, “given the imprecise nature of chronological control, it is not clear whether the inferred Wari invasion and attendant emergence of new community types came *before, during, or after Moche V*” (p. 133, his emphasis).

A single ice core from Quelccaya, fifteen hundred kilometers to the south and thirty-five hundred meters higher in altitude, colors Shimada’s thinking heavily. The inferred climatic disturbance represented by the

depositional anomaly is also invoked by von Hagen and Arnold in their explanations of culture change. The Quelccaya ice core reveals a yearly record of snow accumulation on the glacier since the fifth century A.D. Moisture there is derived solely from airflows emanating from Amazonia. The nature of any meteorological interconnection between Quelccaya and the north Pacific Coast remains to be worked out. Another unresolved issue is how to differentiate strictly local climatic anomalies at Quelccaya from possible broader regional patterns. At this point, substantial disagreement continues. Studies reconstructing past climate on the basis of plant communities derived from pollen sequences have yielded results that sometimes diverge from those derived from inferences based on soil types such as peats, tills, and gyttjas. Neither approach has generated a climatic sequence that correlates precisely with the interpretations based on the single long-term Quelccaya ice core.

Ignoring these problems, Shimada and several other archaeologists have assumed that small pattern shifts in ice deposition at Quelccaya can be used to define meteorological conditions impacting all Andean populations, coastal and highlands alike, from the equator to the tropic of Capricorn. Thus they interpret a regional pattern of ten or twenty years of less ice accumulation in the late-sixth century as signaling an Andean-wide drought, the ecological event responsible for major socio-political upheaval in Peru, including the formation of Pampa Grande as the Moche 5 capital of the Mochica state (according to Shimada), the restructuring of Nasca polities and the development of their *pukio* or underground canal system (noted by Morris and von Hagen), and the establishment of terraced-based agriculture and its spread by the Wari state (discussed in Dean Arnold's book under review in this essay).

The point here is not to argue that no drought occurred. Rather, before invoking climatic determinism, researchers must have much better archaeological control in order to rule out cultural factors. Shimada notes that the archaeological evidence is still so imprecise that he cannot say whether the Wari invasion and the emergence of new types of communities came before, during, or after his Moche Phase 5. If so, then scholars must be skeptical about citing an ice core anomaly dated A.D. 562–594 and lacking any cultural context as responsible for the major cultural shifts that led to what Morris calls “the first empires of Peru,” the Wari and the Tiwanaku. In the U.S. Southwest, archaeologists first blamed a major drought as the sole cause for collapse of the Anasazi culture, but ensuing research by paleo-meteorologists showed that long-term droughts (lasting a decade or longer) recurred several times over the last two millennia. Subsequently, archaeologists have identified a series of factors involved in the Anasazi collapse and have begun to study the ways in which these populations dealt with environmental risks like long-term drought. Although evidence from the Quelccaya ice core is of utmost

importance, archaeological dependence on environmental determinism is at the moment outrunning the available evidence.

*Technological and Institutional Studies*

Dean Arnold has written prolifically on the cultural ecology of ceramics, a theme he pursues in *Ecology and Ceramic Production in an Andean Community*. This study belongs largely to the subfield known as ethnoarchaeology (or actualistic studies in archaeology) in that it focuses on the modern potters of Quinua in highland Peru. Arnold believes, however, that elucidating the relationships linking ceramics, culture, and environment at one point in time (when he was studying the area in the 1970s) will allow him to extend these relationships back in time to ancient ceramic production in the Andes. Quinua, the original site of San Juan de la Frontera de Huamanga in 1539 (before the townsite was moved in 1540 to what is now Ayacucho), is only five kilometers from Wari, capital of the empire from A.D. 550 to 850. Arnold therefore proposes that understanding ceramic production today in Quinua should provide a major step toward understanding ceramic production in the Wari Empire and imperial ceramic production by the subsequent Inka state. In evaluating the environmental variables that would permit full-time ceramic production in the Central Andes when using indigenous technological methods, Arnold finds that climate constraints limit such production to only eight regions (one of which includes Wari). The regions he identifies are all loci of extremely important prehistoric complexes and thus constitute a powerful new tool for understanding distribution of certain ceramic styles.

One feature that archaeologists use as a diagnostic trait of the emergence of the state is standardization of ceramics. The assumption is that as pottery production becomes more specialized, ceramic manufacture becomes a full-time occupation and is later organized or controlled by the state (along with other industries) in order to secure economic surpluses. At this stage, variability will be reduced and the pottery will become standardized. This process of standardization has been demonstrated with respect to certain aspects of design and is the means by which archaeologists generally recognize the presence of imperial expansion, like that of the Inka Empire.

One part of this hypothesis assumes that such standardization will apply equally to the paste (potting clays such as kaolinites or laterites), temper (organic or inorganic inclusions deliberately added to improve drying, resistance to thermal or mechanical shock, and the like), and ware (the resulting ceramic, defined in firing by reducing or oxidizing situations as well as by characteristic paste and temper). Arnold finds that this is not the case in Quinua, however: paste and temper compositions vary significantly, even though full-time specialized potters are



producing the wares. Old sources of clays and pigments are continually exhausted or obscured, and new sources brought into production, rendering paste analysis more revealing of geological and geographic location than behavioral information employable in cultural reconstructions. Arnold found that among the Quinua potters (as he observed earlier in studying potters from Ticul in Mexico), what archaeologists call “temper” was not recognized or employed unambiguously by the artisans. The potters evaluated clay in their own terms, as to whether it had the appropriate stickiness or saltiness. They did not use mineralogical categories (like those employed by Western-educated analysts) except in specific cases where the amount or quality of the mineralogical component was significant enough to affect the physical properties that the potter could detect. The potting clays of Quinua lacked mineralogical standardization and varied a good deal with respect to naturally occurring inclusions like sand and grit. Only in instances where vessels were to be used for cooking purposes did potters make a conscious attempt to add micaceous temper, recognizing that micaceous pastes resist thermal fracture and transfer heat better. A description of Inka ceramics by any contemporary Andean archaeologist would include identification of the mineralogical components of the ware, which would be assumed to be “temper.” Arnold proposes that archaeologists are asking the wrong questions, among them expecting standardization in ware and temper as diagnostics of imperial control. His Quinua research suggests that this aspect of standardization would not occur.

If the drought in the late sixth century A.D. was unusual in magnitude, Arnold suggests in *Ecology and Ceramic Production in an Andean Community*, that this event might have enhanced development of the ceramic industry for the Wari Empire. He proposes that agricultural production would have collapsed due to lack of precipitation, leaving former agriculturalists in search of other means of subsistence. Lands once too valuable to allow mining for pottery clays and pigment minerals would also have become desiccated and well-suited for ceramic exploitation. The presumably drier and warmer temperatures would have enhanced ceramic production by eliminating the normal ecological Andean limitations on full-time ceramic production (much of the area has periods of damp and cool weather that inhibit or prevent proper drying of ceramics). Environmental conditions would then have provided an ideal milieu for pottery production, and the newly formed state would have become the distribution mechanism required to find an appropriate market for increased pottery production. During the Inka Empire, local conditions at Quinua were cooler and moister than today, and Arnold’s model would explain why the Inka centers of pottery production were located elsewhere.

Marc Bermann studies ceramics along with household analysis (including investigations of residential structures as well as artifact, ac-

tivity, and work areas associated with domestic households) in his non-traditional perspective on Andean archaeology in *Lukurmata: Household Archaeology in Prehispanic Bolivia*. He argues that most archaeological studies are too capital-centric (in the Inka case, too Cusco-centric) and that archaeologists have tended to conceive of prehistoric polities as much more integrated and cohesive than they actually were. Prehistoric states have been characterized as tightly integrated politically and economically, pursuing centrally directed strategies, with entire regions presumed to be integrated regionally as clones of the capital. But as Moseley (1992) has shown for Peru and D'Altroy (1992) has detailed for the Inkas, most of the prehistoric populations viewed themselves as residents of their village or local area, domains that were linked only loosely to rulers in forming regional polities.

In the capital-centric perspective, smaller sites have been treated as ahistorical components of larger political formations viewed as highly integrated and unified systems. Bermann argues that shifting the research focus to new analytical units permits development of a locally oriented perspective. Smaller sites become diachronic entities reflecting change. Changes in local site structure (particularly at the household level) can then be interpreted as local reactions to larger orders rather than as state-imposed reorganization. In sites lower in the hierarchical order, such as regional centers, archaeological evidence from ceramics and household construction can reveal the local level of participation in the larger Inka political system. A local perspective can also focus on how the community was integrated into the larger system and how the larger system was experienced at the local level.

The site Bermann uses to showcase these ideas is Lukurmata. During much of its fifteen hundred years of occupation, this regional settlement was influenced by the rise and fall of one of the first set of Andean states, Tiwanaku. If production at Lukurmata during its interface with the Tiwanaku state was organized like the subsequent Inka Empire, evidence from the Inka suggests that four shifts should be evident in production at the local level: production should have shifted as soon as Lukurmata was first incorporated into the state; it should have exhibited new forms of surplus production or mobilization when the state experienced expansion; reorganization should have taken place during the mature phase of the state; and the focus should have returned to the local level when the state collapsed.

In analyzing ceramic changes along with the architectural changes, Bermann found that changes in household style did not always coincide with changes in ceramic style, signaling the need to reevaluate precisely what material culture traits should be employed as the prime identifiers of social change in the archaeological record. Moreover, Bermann argues that in considering ceramics and household, the greatest change was

actually observed in domestic architecture—in the shape, size, groupings, layout, and variety of construction features. The domestic architectural sequence began as an independent hamlet, then shifted to a frontier village of the emerging state, then to a second-order center of the state, and finally to a post-imperial hamlet. Bermann found three productive shifts occurring at the household level: from simple, self-sufficient household units to households producing surplus that entered the state system; a subsequent shift to complex households differentiated according to class or status as Lukurmata became a second-order center; and a return to simple households after the state collapsed.

Evidence indicates that the Tiwanaku polity extracted or mobilized surplus in much the same way as the later Inka system did at the household level. Bermann believes nonetheless that unlike the examples of Inka exploitation at provincial levels, where the Inka maintained specialized local facilities to assist in extracting surplus (such as the Wanka in the Mantaro area discussed in D'Altroy 1992), such specialized sites or architecture did not exist among the Tiwanaku, although these features were typical of the Wari state. Hence in terms of derivation or origins of the Inka state, Bermann suggests that the Wari are a more appropriate model and that the Tiwanaku form offers a second Andean variant. In view of the linguistic ties, this interpretation appears to support the idea that the Quechua ayllu was organized in slightly different hierarchical forms than the nested dualisms of the Aymara *h'atha* and that the political economies of the Quechua and Aymara can be considered distinct.

The researchers participating in the Upper Mantaro Archaeological Research Project (UMARP) have generated a series of significant publications in the last decade. Two of them are included in the current review: Christine Hastorf's *Agriculture and the Onset of Political Inequality before the Inka* and Terry LeVine's edited volume *Inka Storage Systems*. The two works are somewhat functionally related in that Hastorf is interested in agricultural productivity while LeVine is concerned with the facilities in which agricultural production was stored. Earlier studies of agricultural production in the Andes have focused mainly on the various plants added as crops to the repertoire of economic resources over time. Hastorf argues that changes in agricultural productivity may be used to study shifts in power through changes in access to resources, demographics, local-level group interactions, external political forces, and shifting political boundaries. *Agriculture and the Onset of Political Inequality* details agricultural change in the Sausa area of the Mantaro Valley by comparing proposed optimal agricultural crop-production ranges, an agricultural baseline, and the actual production data from the archaeological materials. The optimal model was derived by interviewing modern-day farmers working fields at different elevations in the Jauja area, determining the strategies employed in different altitudes and topographic situations,

and then calculating idealized yields. Hastorf made certain assumptions about the size of the minimal family unit, the number of calories required, and maximization strategies that could or should be employed. Hastorf compares these idealized optimal and maximal solutions with agricultural production as reconstructed from paleo-ethnobotanical data recovered from archaeological flotation samples (which are processed exactly to recover carbonized botanical remains as small as half a millimeter). The disjunction between the optimal or maximal models and the field data are thus used to reconstruct the shifting social and political bases for agricultural production. In comparing this information, Hastorf detects a shift toward a polity with hereditary inequality, increasing control over labor, changing political structure, and increasing class orientation. She dates this shift as beginning around A.D. 1300 and persisting into the period of Inka control. Although the point is not explicitly stated, Hastorf seems to imply that this kind of pattern may also have characterized the Killke in the Cusco area and contributed to the rise of the Inka.

LeVine's *Inka Storage Systems* brings together several studies from the UMARP project and three other essays covering areas north of Jauja and thus details Inka storage according to researchers working in the north-central and central sierra of Peru. Most of the contributions were either published previously, extracted from master's or doctoral theses, or derived from research reports having limited circulation. Although much of the material was already in print, it was scattered (sometimes in obscure sources) or not readily available, hence the advantage of having it all collected in a single volume.

Timothy Earle's and Terence D'Altroy's arguments on staple finance in contrast to wealth finance and the relationship of staple finance to the elaboration of storage complexes are analyzed by several contributors to the LeVine volume. Descriptions of the size and location of specific storage complexes underscore one of two patterns. In one pattern perceived, major storage complexes are viewed as a phenomenon specific to the sierra and interpreted as a component of settlement planning exemplifying territorial control, in contrast to coastal areas incorporated through basically hegemonic control,<sup>2</sup> where the lack of storage complexes deprived coastal polities of potential resources for political purposes. Those perceiving the second pattern argue that elaborate storage complexes were a manifestation of political power in a staple-goods economy where decentralization was a politically appropriate strategy, making storage facilities the visible remnants of the extractive system of the dendritic (branching) and vertically organized Inka economy.

Several of the essays in LeVine's *Inka Storage Systems* deal with the

2. For a discussion of the implications of territorial versus hegemonic for the Inka, see D'Altroy (1992).

issue of identifying what kind of goods were stored in the storage *qollqa* or *colca*. Initial studies identified special ventilation and insulation features that would have retarded losses of stored comestibles, making these structures particularly appropriate for storing foodstuffs (even though sixteenth-century documents record that cloth, clothing, sandals, and other potentially useful military logistical goods were also kept in these complexes). Although the first archaeological study found a correlation between grains and circular structures and between root crops and rectangular structures, subsequent studies found that both circular and rectangular structures were used to store all crops and therefore one could not determine the probable foodstuff involved from the geometrical shape of the building. A finding of wheat in one complex proved that these structures continued to be used after the Spaniards arrived.

The origin of specialized architecture for storage is also discussed in several contributions. Despite claims to the contrary, Earle dismisses all evidence prior to the Inka expansion, arguing that the development of the extensive complexes is associated specifically with the mechanism of institutional finance through staples. He believes that except for a few architectural complexes associated with the Wari state (such as Azangaro and Pikillacta), all other storage structures at centers like Chan Chan and other pre-Inka polities were used to store wealth rather than staples and hence were significantly smaller and more restricted in access than the *qollqa*-type storage. Earle also dismisses claims of pre-Inka development of small complexes of storage *qollqa* in the Mantaro Valley as sites that were inadequately or incorrectly dated. He argues that the large storage complexes (such as Hatun Xauxa and Cotapachi), which involved two thousand structures or more, were developed to solve the problem of large-scale institutional support for a staple finance system in the absence of a market system. This interpretation represents a major advance in understanding the functioning of the Inka economy. It seems unnecessary, however, to assume that specialized architecture for the storage of foodstuffs would have been limited to only the Inka staple finance mode. Archaeological evidence from Huamachuco as early as A.D. 300–400 as well as later structures in Wari Empire sites and some smaller pre-Inka polities between Wari and Inka periods also seem to have served the same function in storing foodstuffs to be mobilized by the local elite.

Jean-Pierre Protzen's superb *Inca Architecture and Construction at Ollantaytambo* examines a site that one researcher called the most sophisticated building stonework in pre-Columbian times (Hollowell 1987). Ollantaytambo was part of Inka Pachakuti's royal estates in the mid-fifteenth century but also served as Manqo Inka's stronghold and base of operations during his attempted rebellion against the Spanish in 1536. The site experienced at least two major periods of construction: one when it was upgraded as part of Pachakuti's estates between A.D. 1438 and 1471;

and a subsequent phase when Manqo Inka was erecting defensive features in efforts to rebuff the Spaniards.

Protzen presents his research in three segments: the identification of architectural structures and ground plans; his reconstruction of Inka stonemasonry techniques, from quarrying to finishing stone; and the definition of masonry features that he employs to define the two different building phases. In discussing the architectural canons, Protzen goes beyond mere size and layout to include the esthetic as well. He argues that the Inka tried to create harmony between nature and the built environment. Terracing was designed to enhance rather than violate natural topography. Structures were frequently built on high locales that offered panoramas of rivers, lakes, or mountains. Like most royal estates, Ollantaytambo displayed elaborate waterworks as well as "veiled and unveiled vistas" (p. 281), defined by Protzen as the articulation of "poetic and dramatic succession of spaces" as one moves through a site (p. 73). Structure design also shows attention to managing ease of access and supply lines as well as controlling the movements of resident populations. Protzen's description of buildings and construction styles replaces the previous authoritative source provided by Graziano Gasparini and Luise Margolies (1980), even though Protzen's focus limited to the Ollantaytambo estates cannot offer the same breadth of field.

Specific construction details are illustrated brilliantly by photographs and plane and isometric drawings. Protuberances on the stones, whether bosses or "*jetas*," are interpreted as deliberate projections employed to handle and lift the stones. T-shaped copper or bronze clamps were employed to join stones in some instances. The use of T-shaped clamps at Tiwanaku, along with similar protuberances or *jetas* there and at other Titicaca basin sites, appears to suggest that Inka stonemasonry derived at least in part from Tiwanaku antecedents because *jetas* and clamps also are found in some Inka constructions in Cusco. Protzen suggests that the means for this technology transfer were Qolla mitmaq stonemasons from the Titicaca Basin who were brought in by Pachakuti. The rationale for the specific shape and location of wedge stones is masterfully described. One comes away with a dynamic picture, a clear visualization of Inka stonemasons constructing the walls and doorways stone by stone: how to integrate doorjambs; how to dress, fit, and lay the stones; and when to insert a wedge stone. Protzen conducted experiments in quarrying and discovered that the technology could be readily replicated by simple stone-on-stone processes. Movement of construction blocks, some of them weighing more than a hundred metric tons, from the quarry to the river seems well worked out, although Protzen admits the difficulty of employing the same methods in close quarters.

Some structures at Ollantaytambo are incomplete, clearly abandoned in progress, and at least some of the later structures were con-

structed in part from recycled stone. The structures still seated in bedrock and those displaying an earlier door style (narrower and taller than later doors) are viewed as belonging to a first phase of construction. Protzen surmises that this “Classic Inka” phase may relate to importation of Qolla workers by Pachakuti Inka. Protzen ascribes the second phase of construction—which used recycled stonework and the later door style but was abandoned before completion—to a “Late Inka” phase of construction related to Manqo Inka’s activities when he took over Ollantaytambo as a seat of power.

A scholarly tiff mars the magnificence of *Inca Architecture and Construction at Ollantaytambo*, however. Three years before Protzen began his studies, J. Lee Hollowell had worked at Ollantaytambo, and Protzen apparently considered collaborating with him initially. This volume makes no mention of Hollowell’s earlier research, an unfortunate omission in that all other archaeological work at the site appears to have been reviewed and incorporated. Hollowell defined five different architectural styles at the site, in contrast to Protzen’s two (see Hollowell 1987, 1989). One wonders how they relate. Hollowell provided four radiocarbon determinations (A.D. 1310, 1435, 1480, and 1560 uncalibrated), which could have materially assisted Protzen’s attempt to interpret the time depth of construction phases. Hollowell also refers to some specific wall segments and building units in portions of the site not analyzed by Protzen. If these findings and analyses had been integrated into the mass of new and synthesized materials presented by Protzen, they could have provided a much fuller picture of the site.

Constance Classen’s *Inca Cosmology and the Human Body* incorporates a wider range of sources than are often employed in reconstruction studies. Some Andean scholars try to “sift” history from myth and regard as false Inka lore whatever is not compatible with assumed historical fact. Classen, however, is not interested in whether a report is historically correct but in whether Andeans perceived it as being true. Although some chroniclers have been viewed as presenting “ideal” rather than “factual” accounts of Inka culture, Classen considers the symbolic as a truer picture of cosmology than straightforward factual description. Moreover, the Inka in her discussion are broader than the Quechua groups. For example, her reconstruction includes some data from areas around the Titicaca Basin, which are Aymara and not Quechua. In this sense, Classen blends the last five hundred years of literature on Andean cosmology into a homogeneous and generic model.

*Inca Cosmology and the Human Body* employs imagery using the human body as a template for understanding cosmology and cosmogony. This imagery involves not only the obvious body structure replicated in Inka dyadic principles (such as left and right, male and female) but also indigenous ideas about physiology such as fluidity and circulation, re-

production and death. Classen openly borrows the perception of cosmological order as being represented by the physical body from Mary Douglas's *Natural Symbols: Explorations in Cosmology* (1970). But for the Inka, cosmology was not simply inscribed on a passive body but lived and experienced through the very core, the *taypi* of the body.

Classen argues that two of the human senses, sight and hearing, were a paired duality for the Inka. Sight was associated with clarity and structure, while hearing was associated with obscurity and fluidity. The two balanced each other and were essential components of Inka ritual. Classen comments that the typical Western focus on the visual, on "culture as text," thus misses an essential half of Inka rituals. Ceremonies were rich in auditory as well as visual symbols, and integrating both dimensions was fundamental to Inka ritual. Such a focus makes it easier to understand how the major Inka deity Illapa could be simultaneously "lightning" and "thunder," in that these concepts are Inka sensory complements of one another.

The concept of *taypi* as center transforms the standard Inka dyadic pattern into a triadic one. Physically, *taypi* is the center between two segments, the point of necessary convergence where the centrifugal force that permits dyadic differentiation coexists with the centripetal force that ensures their mediation. *Taypi* is thus the integrating yet separating center. Hence the major Inka gods such as Sun and Thunder are tripartite divinities, kin groups are often divided into three parts, the human body and cosmos are divided into three parts, there are three souls, and so on. This concept of *taypi* has recently been posited by Kolata (1993) as the basic cosmological integrating feature of the Tiwanaku state, with the Tiwanaku capital itself physically embodying this principle and thus serving as the *taypi* of the Andean world.

### *Final Remarks*

These nine studies of the Inka and their ancestors take several different tacks, but each contributes to a more dynamic reconstruction of Inka culture as a whole. The expanding database derived from excavations now allows researchers to escape the bounds of the early preliminary reconstitutions characterized according to capital-centric views as tightly integrated and homogeneous polities. The more recent evidence depicts patchwork entities, temporarily cobbled together for political expediency. Instead of envisioning unchanging states that lasted several centuries, we can now perceive the rise and fall of various cities, the ebb and flow of power, sequential phases of integration and loss in various regional centers. Adding to the enhanced archaeological picture are new ethnohistoric, ethnographic, and ethno-archaeological studies that provide more expert knowledge of the actual environment (social and ideo-



logical as well as physical) in which Andean natives were located, the constraints they dealt with day to day, and their perception of their place in the cosmos. For example, the perception that each individual was a member of the social order (community, class, or other group) but was also part of the cosmic order (in terms of complementary duality, integration of parts through the circulation of fluids, the mediating role of *taypi*, and similar concepts) will help researchers escape from viewing Andean events strictly through glasses tinted by Western cultural values. This perception will also encourage them to don lenses with Andean corrections that will provide greater clarity for reconstruction and understanding.

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