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Recent Research on the Central Andes

Terence N. D'Altroy¹

This paper reviews the rapidly changing archaeology conducted in the central Andes over the last 5–7 years. Descriptive work remains at the core of much research. At a theoretical level, foreign archaeologists are more fully using historical concepts particular to the Andes, while Andean archaeologists are drawing selectively from processual and post-processual approaches. Advances in understanding cultural historical developments are reviewed chronologically, with an emphasis on politics, social formation, ideology, settlement patterns, and economics. The article concludes by examining environment and subsistence, technology and society, and gender.

KEY WORDS: Andes; South America; archaeology, Inka.

INTRODUCTION

Andean archaeology in the 1990s is a very different beast from that of a quarter century ago. Although some prominent scholars, such as Luis Lumbreras, couched their explanations of prehistory in broad theoretical terms decades ago, most archaeologists working in the Andes focused on investigating regional cultural histories. In an area rich in prehistoric cultural traditions that were distinctive in many ways, comparisons were drawn mostly within the Andes. That inclination has been selectively changing in recent years (although see Rice, 1994). Many scholars from the Andean republics have modified their approaches by applying cross-cultural explanatory concepts, tailored to Andean viewpoints, and employing analytical methods used more commonly elsewhere in the Americas. At the same time, foreign archaeologists have followed the lead of ethnohistorians by paying closer attention to the distinctive characteristics

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of Andean cultures in proposing social explanations for the generation of the material record. The stimulating result is a series of major advances in our understanding of Andean prehistory and a more widely shared conceptual vocabulary for exchanging ideas.

The present article is a review of recent publications on Andean archaeology from the Lake Titicaca Basin north through Peru and Ecuador (Fig. 1). It is organized primarily along chronological lines, with a secondary breakdown by geographic region. Thus, the discussion flows from general overviews, to the Archaic, the Preceramic, and through the sequence of cultural periods to the Inkas. Thematic sections that follow include environment, subsistence, and society; technology and society; and gender studies. Generally speaking, I follow Rowe's chronology of horizons and intermediate periods, although much of the work reported here lends itself to a reevaluation of that scheme (Fig. 2).²

GENERAL AND REGIONAL OVERVIEWS

After more than a decade passed without a comprehensive new discussion of the Andean past to supplant Lumbreras's widely used English overview of 1974, several investigators began to publish regional and grand scale summaries of prehistory starting in 1988. The first of those works was Keatinge's (1988) edited volume, which featured regional or culture-specific summaries by individual authors. Because that book was several years in

²A few explanations and caveats are in order about the scope of this discussion and the references listed. I have assumed that my assignment is largely to present a synthetic report on the work of many scholars. The discussion attempts to represent their research forthrightly and refrains from raising points on which my interpretations may differ, except in the concluding section. In an effort to provide comprehensive coverage of publications since 1990, about 500 works are cited. Selected works from 1988–1989 also are listed, if they seem especially important. Readers may note a regional bias in the coverage, leaving gaps that I hope will be addressed in a future essay. Whereas I have been able to obtain the literature from Peru fairly readily, that from northern Bolivia is less well represented, and my access to Ecuadorian publications has been much more limited than I would prefer. Although I have tried to include recent doctoral dissertations, since they are often the best sources for up-to-date field results, they are hard to obtain (owing to libraries' budgetary constraints), and many citations here are based on published abstracts. Multiauthor compilations whose contents vary widely are listed in more detail than similar works on closely related themes, but not all contributions are listed even for collected works. The publications of especially prolific authors are only sampled, which may be an unwarranted penalty for productivity. Readers may be assured that authors with more than about four citations here also had other publications that did not make the bibliographies. Finally, some serials, such as those put out by local museums or faculties, are not included here, although they may contain information of value to readers interested in specific locales. A regrettable consequence of the limited circulation of those publications is that the work of local scholars is underrepresented.

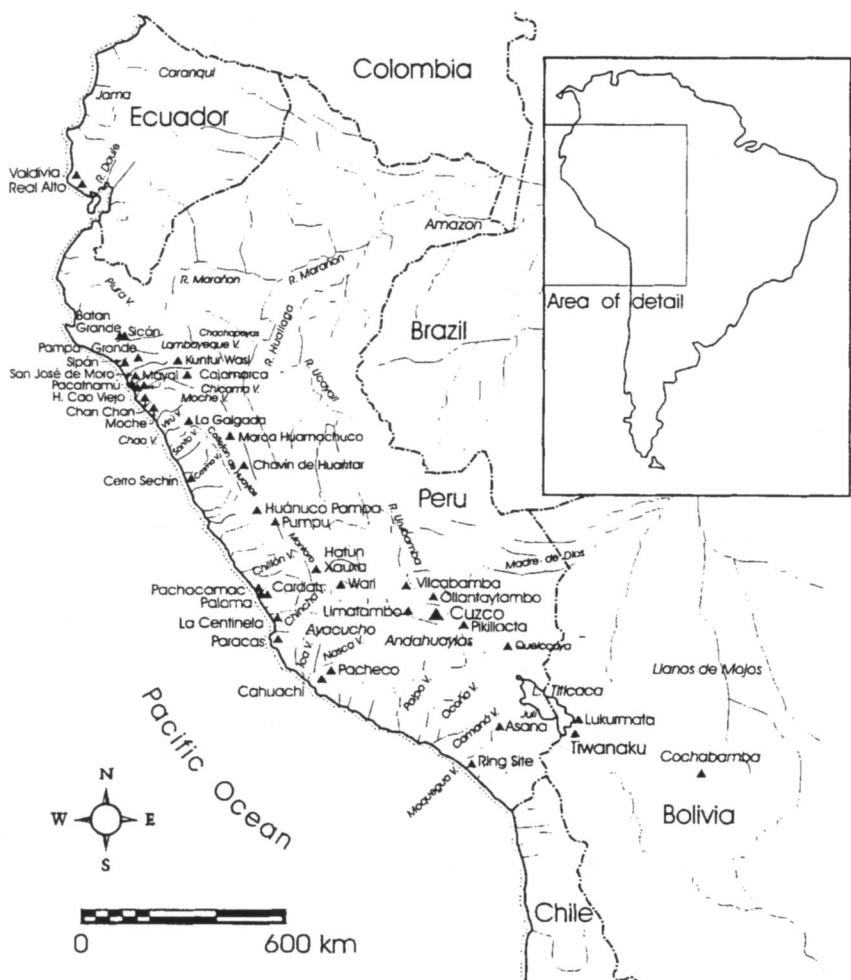


Fig. 1. Map of the central Andes, including the locations and sites mentioned in the text.

completion, it represented the state of knowledge on Peruvian prehistory from the beginning of that decade, rather than the end. Drawing from the marked increase in our empirical knowledge of Andean archaeology over the last few years, Bonavia (1991a) has written by far the most comprehensive review of Peruvian prehistory from the initial occupations up to the Inka era. His work provides a review of the major cultures by an active

Calendric dates	Ecuadorian periods	Ecuadorian cultures highlands (h) and coast (c)	Central Andean periods	Central Andean cultures and sites	South Titicaca basin cultures
1532 AD	Spanish contact	Spanish contact	Spanish contact	Spanish contact	Spanish contact
1500 AD	Late Horizon	Inka	Late Horizon	Inka (h)	Inka
1000 AD	Integration Period	Manco (c, h) Jama-Coaque II (c)	Late Intermediate Period	Chimú (c) Chancay (c) Ica (c) Sicán (c)	Pacajes, Mollo Tiwanku V
500 AD			Middle Horizon	Wari (h)	Tiwanku IV
1 AD	Regional Development	Jama-Coaque I (c) Guangala (c) Jambeli (c)	Early Intermediate Period	Moche (c)	Tiwanku III
500 BC				Sipán (c) Nazca (c)	Tiwanku II
1000 BC	Late Formative	Chorrera (c)	Early Horizon	Vicús, Gallinazo (c) Salinar (c)	Tiwanku I Yaya-Mama
1500 BC		Machalilla (c)	Initial Period	Paracas (c) Chavín (h) Cupisnique (c)	Late Chiripa
2000 BC	Early		Late Preceramic	Caballo Muerto (c)	Middle Chiripa
2500 BC				Las Haldas (c) Cerro Sechin (c) La Galgada (h)	Early Chiripa
3000 BC	Formative	Valdivia (c)	Middle Preceramic	El Paraíso (c) Kotosh (h) Ancon (c) Huaca Prieta (c)	
3500 BC	Palaeo-Indian	Late Vegas (c)	Archaic	La Paloma	Preceramic

Fig. 2. Chronological chart for the central Andes.

archaeologist intensively involved in fieldwork and the comprehensive picture. His study endeavors to tie material remains to sociopolitical developments at the regional level and thus moves away from the horizon-intermediate period chronology that dominates Andean studies. In a companion work, Pease (1992b) provides an overarching discussion of the Inkas, based largely on documents rather than archaeology.

Equally sweeping, but less detailed and more theoretically oriented than Bonavia's book, are Moseley's (1992a) and Richardson's (1994) overviews of Peruvian prehistory. Moseley's perspective introduces environmental factors, such as tectonic uplift, drifting sand, and microclimatic change, as significant contributors to key cultural shifts. Lumbreiras' earlier (1989b) overview also has a strong theoretical bent, but in his case the perspective is Marxist rather than ecological. For reviews of Ecuadorian prehistory, the reader may consult the first two volumes in the series edited by Ayala (1988). Several briefer review articles on Andean prehistory also have appeared recently (e.g., D'Altroy, 1994a; Hyslop and Drier, 1992), and Schaedel (1991) has written an overview on Andean urbanism, which usefully examines residential urbanization and monumental construction as separate phenomena. With differing degrees of emphasis, the above authors

point to both general process and the specifics of life in the Andes as factors in prehistoric developments.

How to link archaeological periods to sociopolitical change, a concern in the foregoing works, is the overt subject of Rice's (1993a) edited volume. Curiously, while many Mesoamericanists have begun to favor using the notion of horizons, Andeanists are discarding it. The latter are increasingly adopting the processual and postprocessual perspectives that are prevalent in North and Mesoamerica. Accordingly, Andean authors have moved away from time-space analyses as a goal of research, and cycles of integration and breakdown as descriptive models. They generally agree that the idea of *horizon* has outlived its chronological utility and that many archaeologists have misused it by equating shared iconographic elements or styles with process, cultural links, and political integration (Rice, 1993b). What, if anything, to substitute for the concept remains a problem. Many investigators also overtly eschew the evolutionary or stage-based models used by many North American scholars, preferring to emphasize the cultural and historical contexts of the Andes as a basis for explaining prehistoric developments. Some archaeologists, especially those who work on Chavín, Wari, Tiwanaku, and the Inkas, observe that people did share key ideas across wide regions and that grand-scale sociopolitical integration did occur and must be accounted for (e.g., Burger, 1993; Kolata, 1993b; Schaadel, 1993). However, there is a broad sense that terms such as *horizon*, *chiefdom*, and *state* cover too many bases. Research should be problem-oriented and use particular societies or polities as frames of reference, rather than grand chronological schemes. Andean archaeology is thus drawing closer to the archaeology practiced farther north, though the theoretical foundations of the arguments remain less explicitly comparative.

Despite chronic financial problems and political unrest, archaeologists have managed to conduct field surveys in quite a few areas. Regional studies and catalogs of sites, usually valleywide in scope, are now a staple of the Andean literature. In Peru, for example, site compilations and bibliographic reviews have recently been published for the central-south coast, in general (Mujica, 1990a), and for the Chillón (Silva, 1992), Osmore (Rice *et al.*, 1989), Camaná (Manrique V., and Cornejo Z., 1990), Ocoña (Chávez Chávez and Salas Hinojoza, 1990), Majes (García M., and Bustamante M., 1990), Juliaca (Gallegos Ayca, 1991), Ayacucho (González Carré and Pozzi-Escot, 1992), Santa and Chao (Uceda, 1988), and Pacasmayo (Hecker and Hecker, 1990) areas. The most comprehensive survey, without question, is Wilson's (1988) massive settlement study of the Santa Valley, a work that will stand as a resource for decades to come. Archaeologists working in Ecuador are similarly grappling with the question of how to develop regional sequences that make chronological and explana-

tory sense (e.g., Patiño, 1993; Stemper, 1993; Tolstoy and DeBoer, 1989; Zeidler and Pearsall, 1994). Surveys of the Tiwanaku Valley of the Bolivian altiplano by Albarracín-Jordan and Mathews (1990; see also below) and of the Juli region (Stanish, 1994) also are a major advance in providing the regional setting for the rise and aftermath of the Tiwanaku empire. In addition to their problem-oriented contributions, these reports have greatly augmented our baseline archaeological knowledge of the prehistoric Andes.

THE ARCHAIC

For decades, the early occupation of Andean South America (ca. 10,000–3000 B.C.) has been a hotbed of research for archaeologists, especially from the Andean republics, though foreign archaeologists also have shown a strong interest. Aldenderfer (1989), Lynch (1990), Stothert and Quilter (1991), Llagostera (1992), and Shady (1993) have written valuable synthetic articles on the early Andean occupations. These authors emphasize the remarkable variety of localized adaptations in the Andean Archaic, fostered by the variegated natural environment. In a review of the early occupation of the entire continent, Lynch (1990) takes an especially conservative perspective. He is skeptical about the antiquity of numerous occupations—or the interpretive accuracy of their researchers—that push human habitation back to 15,000 B.P. or earlier. His skepticism has heated and focused the discussion of the antiquity of human society in the Andes (e.g., Gruhn and Bryan, 1991; Lynch, 1991), and there seems little doubt that debates about dating and interpretation of artifacts and features will continue into the indefinite future.

Archaeologists from the Andean republics tend to divide Archaic occupations into coastal and highland adaptations, a pattern Aldenderfer (1989) finds supported by the distribution of lithic raw materials in southern Peru. He clearly summarizes the state of knowledge concerning the Archaic period in the south-central Andes and defines a series of important questions that remains to be addressed. His concerns focus on resource use, especially ecological complementarity, plant and animal domestication, and the emergence of and relations among distinct social or ethnic groups. Llagostera (1992) also provides a good introduction to the sequence of coastal cultures from Chile to Ecuador, underscoring the varied local strategies that seem to have often been tied to increasing sedentism. His interpretations parallel those of other researchers, who infer a long-term trend toward greater exploitation of marine resources to complement gathered terrestrial foods, especially after ca. 4000 B.C. The changes were associated with a range of technological innovations, such as fishhooks and fine mesh

nets, that facilitated fishing. Shady's (1993) synthesis, which focuses more on the transition from the Archaic to the Formative era (Late Preceramic), also emphasizes the variety of adaptive strategies pursued by foraging peoples. She draws attention to the important points that (1) people mixed foraging and farming in the Andes very early, (2) several kinds of specialized subsistence strategies probably antedated 3000 B.C., and (3) increasing use of multiple cultigens was associated with incipient social complexity in the highlands, as reflected in modest mound constructions and differential access to exotic materials (see Dillehay *et al.*, 1989).

Much of the literature on the Archaic continues to focus on site-based or regional reports and on lithic assemblages, which are collectively elaborating our baseline knowledge of early occupations. The most widely discussed materials belong to the coastal Paiján industry (11,000–8000 B.P.), which, it has been suggested, was associated with maritime hunting (Chauchat, 1991; Chauchat *et al.*, 1992b). Isla C. (1990), Becerra U. and Esquerre A. (1992), Gálvez Mora (1992), Medina (1992), and Pelegrin and Chauchat (1993) have all made contributions to describing the sites, lithic assemblages, technology, and distribution of Paiján and other Archaic occupations along the north Peruvian coast. Their work, which has registered a surprisingly large number of early quarry, workshop, and camping sites, will help resolve the debate over the relative importance of terrestrial and maritime foraging. Equally significant in advancing our understanding of Archaic adaptations is the work by members of the Proyecto Contisuyu. In a series of papers (especially Aldenderfer's chapters in Watanabe *et al.*, 1990, Vol. 1; Wise, 1990), they describe settlement and adaptation along the south coast, as well as ceremonialism and mortuary practices (Sandweiss *et al.*, 1989; Wise *et al.*, 1994). A series of papers on the highland Archaic and its transition to the early ceramic era is given by Meggers (1992). In his review of cultures of the altiplano, Arellano (1992) briefly discusses the early occupations. Matos Medietá's (1992) summary review of the central Peruvian puna emphasizes ecological adaptations, especially the transition from hunting to herding camelids and the establishment of permanent settlements.

As Pearsall (1992) describes in an excellent discussion of plant domestication, no single era or location stands out for the domestication of staple crops. Instead, plant domestication started to occur as early as 10,000 years ago and continued gradually over the millennia. Many plants were domesticated individually in a wide range of ecozones, rather than as suites of cultigens, mostly in the highlands and in the warmer wet lands east of the Andes. In a longstanding debate, claims have now been advanced for consumption of maize before 3000 B.C. in Ecuador, coastal and highland Peru, and Chile, based on botanical and bone isotope analyses (see Bonavia and

Grobman, 1989a; Pearsall and Piperno, 1990). The accuracy of some early claims has been challenged (e.g., Bird, 1990), and evidence to support maize-based subsistence before 1000 B.C. in the central Peruvian highlands seems to be contravened by stable isotope analyses of bone collagen (see Burger and van der Merwe, 1990). Nonetheless, recent phytolith analyses from coastal Ecuador reinforce the idea that maize was part of a diverse diet by Terminal Valdivia times, ca. 1550 B.C. (Pearsall, 1994).

LATE PRECERAMIC AND CONTEMPORARY SOCIETIES

The rise of complex society in the Andes is most clearly exemplified by Late Preceramic societies of the central Peruvian coast, but the most precocious sedentary society still appears to have been Ecuador's coastal Valdivia culture of the fourth–third millennia B.C. (Marcos, 1992). Its corporate constructions were most fully elaborated at the site of Real Alto (Damp, 1988), although mound architecture also has been recorded at San Isidro, and several Valdivia era sites have been shown to share the same cardinal orientation (Raymond, 1993). In an intriguing paper, Damp *et al.* (1990) argue that the inland locale—and attendant dependence on agriculture—that has long been attributed to Real Alto is no longer tenable. Using geomorphological data, they suggest that tectonic uplift has moved the coastline away from Real Alto and that it was actually first established to take advantage of nearby littoral resources. That conclusion, which seems to be partially sustained by botanical evidence, forces a reevaluation of the current perceptions of the subsistence foundations of Valdivia culture.

Recent work along the Peruvian coast has shown that even earlier mound constructions have been found in the Late Archaic (a.k.a. Middle Preceramic). On the north coast, for example, small-scale mounds with associated lime processing have been found in the upper Zaña Valley dating to ca. 5000 B.C. (Dillehay, 1992; Dillehay *et al.*, 1989). On the south coast of Peru, the Ring site also appears to have had early public architecture (Sandweiss *et al.*, 1989), as did the site of Asana (Aldenderfer, 1991).

As early as the 4th millennium B.C., communities along the coast of Peru began to undergo a series of changes that transformed them from simple foraging villages to stratified agricultural societies. The best overview of the era may be found in Quilter's (1991) article, which describes the history of research and present knowledge on subsistence, social organization, mortuary practices, and monumental constructions (see also Pozorski and Pozorski, 1993). In outline, by the mid-third millennium B.C., preceramic societies had become socially differentiated, developed craft specialization and formal ideologies, and erected a variety of large-scale ceremonial con-

structions. After ca. 1800 B.C., there was a marked shift toward a reliance on farming, a movement of much of the populace inland, and erection of even more grandiose architectural complexes that shared key organizational features, all coeval with the widespread adoption of pottery vessels. Developments in the highland valleys on both sides of the Andes foreshadowed much of what was to come on the coast, though upland societies never attained the same degree of scale or complexity.

Much of the interest in the Late Preceramic period continues to center on the food base. For the subsistence adaptations of the time, Fung Pineda (1988) and Quilter (1991) provide detailed reviews. An especially useful contribution to the debate on the adaptive advantages of different strategies comes from Benfer's (1990) analyses of the bioindications of human diet in the coastal Preceramic. Contrary to many of the arguments made on the basis of population growth and subsistence stress models, Benfer argues that the biological material remains (e.g., human osteological composition, fauna) indicate that the peoples occupying Paloma were improving their adaptation to the environment, even while the population was increasing. Intriguingly, his work shows a gradual convergence of the nature of work for males and females, probably related to increased fishing and lowered dietary stress.

For about 20 years, archaeologists have been debating the merits of the proposition that a largely marine-based foraging economy sustained sedentary, town-sized communities with social ranking, public architecture, and craft specialization. The discussion, most forcefully articulated by Moseley (1975), shows little sign of abating, though there is an emerging consensus that coastal subsistence was varied and locally adapted (e.g., Quilter *et al.*, 1991). Recently, the maritime subsistence premise has been reconsidered from several perspectives (see papers in Sandweiss, 1992a). Moseley (1992b) provides a valuable reflection on the development of the argument over two decades, drawing on the results of environmental analyses (e.g., changes in sea level) conducted since the 1970s. He concludes that there is still substantial merit to the basic argument that marine foods were ample and predictable enough to nourish permanent communities with emergent social ranking, but concurs with most scholars that varied food-getting strategies characterized the fourth–third millennia B.C. Stothert (1992) marshals the far more limited evidence for the Ecuadorian coast to argue that the notion of a maritime-based economy is inappropriate to that region. Instead, she envisions a precocious mixed farming economy that took advantage of higher precipitation to develop rainfall agriculture, combined with plant gathering and riverine and marine fishing, by the third millennium B.C. (cf. Damp *et al.*, 1990).

The evidence thus points to a variety of locally adapted, coextensive, subsistence strategies during the Late Preceramic. How those developed locally will undoubtedly be an important element of fieldwork in the near future. An intriguing suggestion is that farming in the coastal valleys was introduced by highland peoples moving downward, rather than by littoral communities moving inland (Moseley, 1992b; see also Grieder *et al.*, 1988). Though that argument has the advantage of positing only a spatial relocation, without requiring a shift from fishing to farming, the architecture of the early farming sites seems to have more in common with coastal counterparts than with coeval highland sites.

Just as the evidence shows a variety of local subsistence changes through the Preceramic, several areas show evidence of gradual, apparently home-grown, development of practices tied to social differentiation and integration. Most researchers assign group ceremony and ritual leadership pivotal roles in forming the character of the increasingly complex Andean societies. Typically, the problem is addressed through study of patterns of ceremonial/public space and architecture. Feldman (1992) suggests that three basic patterns arose: one along coastal Ecuador, one in the central Peruvian highlands, and one along the central-to-north Peruvian coast. Broadly speaking, ceremonies appear to have moved from exclusive rituals practiced in the interior of structures to more public, open-air affairs, suggesting that the scale and nature of social integration were gradually changing.

The best overview studies of the construction of ceremonial architecture and its relation to the sustaining populace are found in Pozorski and Pozorski's preliminary volume (1987) and summary article (1993) on the Late Preceramic and Initial periods of the coastal Casma Valley, and Grieder and co-workers' (1988) more comprehensive book on La Galgada in the inland Tablachaca Valley. The Japanese expedition to the Cajamarca region and the eastern Andean slopes also continues to pay dividends in discussions of the transition from the Late Preceramic to Chavín-era societies. Building on a series of detailed volumes produced over the last couple of decades, Onuki (1993) usefully summarizes trends in the upper Huallaga, an area of precociously elaborate mound architecture. Seki (1993) similarly reviews the key elements of early ceremonial constructions in the Cajamarca basin.

Unfortunately, the scope of research dedicated to more quotidian architecture has been overshadowed by efforts committed to public construction. That imbalance is partially redressed by Malpass and Stothert's (1992) review of the evidence for Preceramic households from Ecuador to Chile. Assembling information from numerous site reports, they document a general transition toward changing family composition and greater sedentary

rism, in part implied by larger dwelling sizes, subfloor burials, and a greater investment of labor in more permanent constructions. Such changes were precocious in Ecuador, more fully elaborated in Peru, and later and less complex in northern Chile. They follow Flannery's notion that the construction of rectangular structures implies greater permanence and development of hereditary resource ownership. That premise is intriguing in that rectangular houses appeared on coastal Peru in apparently permanent villages in association with a dependence on marine resources and incipient horticulture.

Quilter's (1989, 1991) evaluation of the mortuary practices of the Preceramic reinforces the notion that social differences were arising within coastal societies. The presence of dedicatory burials, significant variations in the array of associated burial furniture, and interment of individuals in monumental architecture at a number of sites underscore that individuals were treated differentially for their passage to the afterworld (see especially Grieder *et al.*, 1988; Torres Pino *et al.*, 1990).

THE EMERGENCE OF FARMING, DIFFERENTIATED SOCIETIES (A.K.A. THE INITIAL PERIOD)

The shift from the Late Preceramic to the Initial period has been a major concern of archaeologists for the last two decades, with an ever-increasing pace of publications. One of the most interesting interpretive shifts has arisen from investigators' intense concern with chronometric dating, although the unfortunate practice continues in many publications of reporting only uncalibrated radiocarbon assays, leaving it up to the reader to do the calculations for comparative purposes. The efforts to pin down the timing of the remarkable changes of the early second millennium B.C. have often revolved around working out a sequence of adaptive and organizational stages. Reported radiocarbon dates show a temporal overlap of several hundred years between preceramic and early ceramic components. Although much of the imprecision is often attributed to the stochastic errors inherent in chronometric assays, archaeologists are now shifting to more subtle explanations. Many now suggest that the nature and pace of change likely differed among social groups who lived near one another (e.g., Burger, 1988, 1992; S., and T., Pozorski, 1990; Pozorski and Pozorski, 1993; Quilter, 1991). Arguments are common that some coastal societies retained a marine foraging economy, while interior coastal communities pursued mixed agricultural and foraging strategies.

The Initial period coastal societies were undeniably more complex than those of the Late Preceramic, but archaeologists disagree over the organi-

zation needed to build the architecture and irrigation systems. Drawing from their work at Cardal, Burger and Salazar-Burger (1991) note that some early mounds arose from the addition of multiple layers, each requiring only a modest labor investment. Because some valleys contained several contemporaneous mounds built over centuries, they suggest that fairly simple societies may have erected some monuments through intermittent collaborative efforts. Other archaeologists observe that the largest monuments exhibit a degree of planning and scale that would have required centralized direction and perhaps specialization (e.g., Pozorski and Pozorski, 1993; Shady, 1993).

Nowhere else did the intensity of the Initial period surpass that of the Casma Valley. In a series of articles based on their work there, Pozorski and Pozorski (see above, also Pozorski and Pozorski, 1991; T. and S., Pozorski, 1990) have been exploring the nature of late preceramic and early ceramic social formations. They have described a shift to the main indicators of the Initial period by about 1600 B.C. (uncalibrated), e.g., significant monumental construction, a shift to reliance on irrigation agriculture, and adoption of ceramic vessels and weaving. A recent volume on the constructions at Cerro Sechín describes the nature of the most elaborate of early monumental architecture in South America (Maldonado, 1992). The architectural evidence provides confirmation of three major trends previously described for the era: (1) a shift from an interior focus for ritual (e.g., enclosed rooms with ventilated hearths, especially in the highlands) to more public ceremonies; (2) a sharing of fundamental notions of early ceremonial construction (e.g., terraced platforms, sunken circular pits) along the north-central coast and adjacent highlands; and (3) local tailoring of the architectural forms and presumably ceremonial practices.

The highland counterparts to the complex social formations of the pre-Chavín era also have been a subject of great interest to Andean scholars (see preceding section; Grieder *et al.*, 1988; Onuki, 1993; Seki, 1993). In a discussion of the societies of northern Peru, Shady (1992) describes the development of socially differentiated communities that gradually adopted irrigation agriculture to support a growing population. She concurs that ceremonial relations provided the means by which regional polities began to coalesce and points out that the regional integration of those polities occurred some centuries before the Chavín phenomenon.

Although most of the interest with monumental constructions in the Late Preceramic and Initial periods has been focused on socioreligious organization and the nature of ceremonial architecture, there is an abiding preoccupation with the nature and chronology of the iconography. That concern is reflected in contributions to the prolonged debates over the dating and character of the sometimes gruesome carved stone slabs at Cerro

Sechín (e.g., Bischof, 1991; Bonavia, 1990, 1991b). Bischof (1994) reviews the most important sites from which artwork has been recovered from the Late Preceramic period into the Chavín era (see below; see also Fuchs, 1990). On the basis of a stylistic analysis and the somewhat inconsistent array of available radiocarbon dates, he has suggested an iconographic seriation that recognizes parallel regional developments.

CHAVÍN AND ASSOCIATED CULTURES (A.K.A. THE EARLY HORIZON)

Since Tello's pioneering work in the 1920s, many archaeologists have treated the Chavín cultural phenomenon of Peru's first millennium B.C. as the source of Andean civilization. In recent decades, a less grand conception has held sway—that Chavín ideology broadly integrated Peruvian societies during an era referred to as the Early Horizon in Rowe's widely used chronology. Although there is now considerable evidence that antecedent societies of Peru's north coast were larger scale than anything else until the Moche polities, Chavín remains conceptually at the core of Andean archaeology. Two recent volumes by archaeologists who have worked at the main site of Chavín de Huántar and other contemporary sites lay out different perspectives on the issue.

One of the most important contributions of the eminent Peruvian archaeologist, Luis Lumbreras, has been a series of articles on Chavín de Huántar, based largely on the excavations of 1966-1973, that he, Amat, and González conducted. In his book, Lumbreras (1989a) describes prior research on the Chavín phenomenon and his own work at length and then updates his own views. His work is valuable both as a site description and as a synopsis of the progression of ideas that have been proposed to account for the formation of early civilization in the Americas. Like most archaeologists who have grappled with Chavín, he argues that its import is belied by the core site's modest scale and that its significance lies in the influence of the ideas that had their source at the center. Similarly, Richard Burger (1992a, 1993) argues that ideology was the dominant force in the formation of early complex societies of Peru. He notes the Initial period antecedents to many of Chavín's cultural features (e.g., iconographic motifs, agricultural economy, layout of monumental architecture, specialized craft production) but concludes that Chavín's coalescence and elaboration of those features produced a major advance. A main point is that cultural diversity combined with shared Chavín ideology and material culture to produce locally focused societies within regional interaction spheres. He argues that religion provided the social glue of these early societies and

downplays the organizational impact of coercion, differential control of productive resources, or class exploitation.

A similar perspective is shared by several of the contributors to a volume on ceremonialism in the Andes (Millones and Onuki, 1993). As do his colleagues for the earlier eras (see above), Matsumoto (1993) summarizes the key changes in ceremonial architecture and ceramics for the Chavín era and succeeding Early Intermediate period. He argues that his evidence sustains the broad notion of an integrative horizon, followed by a period of regional autonomy. The Japanese excavations at Kuntur Wasi also have uncovered complex platform architecture, within which burials have yielded a wealth of fine craft objects in gold, ceramics, and shell (Kato, 1993; Onuki, 1990).

Researchers working on the Chavín era continue to pay considerable attention to iconography and material culture. Many scholars accept the notion that the fantastical Chavín art style was the religious iconography of an integrative cult. It combined imagery from the forest, highlands, and coast, with allusions to hallucinogenic drug use, laid out in a symmetry that represented elements of Andean social order, such as duality (e.g., Fuji, 1993; McEwan, 1992; Vergara M., 1991). Both Lumbreras (1989a) and Burger (1992a, 1993) also provide detailed assessments of material remains, some previously unpublished, recovered from Chavín de Huántar and coeval sites; intriguingly, some of the remains at the main site imply human cannibalism. Elera (1993) describes the coastal Cupisnique era, whose material culture preceded and overlapped with the Chavín-era materials, and has been proposed as the antecedent to the Chavín style since Larco Hoyle's work of the 1940s. The production of Cupisnique ceramics in the extensive series of kilns found at Batán Grande also is explored by Shimada *et al.* (1994). The long debate over the coastal–highland relationship has been convincingly settled in favor of Cupisnique's greater antiquity (see Onuki, 1993), but persuasive explanations of the nature of the interregional relationship and developmental sequences remain elusive.

THE CULTURES OF THE EARLY INTERMEDIATE PERIOD

Emergent States on the North Coast: Moche and Contemporary Societies

The north coast of Peru has long traditions of both extraordinary prehistoric civilizations and important archaeological research. These two features have taken center stage again recently, as archaeologists have made exceptional discoveries and have rethought the nature of early complex so-

ciety in creative ways. Many of the reconceptions are presented in a single volume that reflects the last decade's work by Peruvian and foreign scholars (Uceda and Mujica, 1994b). A key conceptual change is a more fine-grained understanding of the range of societies that lived in coastal valleys during the Early Intermediate period. Conventionally, the cultural chronology has usually been described as a sequence of the Vicús (far north), Salinar, Gallinazo, and Moche cultures, although archaeologists have judged for some time that a Moche polity did not really begin to dominate the entire north coast till Moche III times, i.e., starting about A.D. 200. In the standard view, Moche culture dominated through the succeeding Moche IV phase, and then the southern part of the polity collapsed, as power shifted northward to the Lambayeque region ca. A.D. 600.

The intensive recent research has shown that the situation was far more complex and engrossing than such a sketch suggests. Important explanatory changes have been developed from most archaeologists' explicit separation of culture area from polity. Years ago, Andeanists began to discard the idea that stylistic sequences directly reflected sociopolitical change. Now they are attempting overtly to explain the cultural and historical contexts within which social formations and polities were intermixed with contemporaries or supplanted by successors (see especially Donnan and Castillo, 1994b). For example, Shimada and Maguiña (1993; see also Narváez, 1994) provide evidence that the Gallinazo and Moche cultures, which appear to have been sequential in the Virú Valley, existed coevally in the northern Lambayeque region as late as Moche III times. Similarly, Kaulicke (1991, 1992, 1994) argues for a long Moche presence in the far north, intermixed with local developments. The most prominent local culture there, identified essentially on the basis of a distinctive ceramic style, is the Vicús culture, focused in the Piura Valley. A new volume (Makowski *et al.*, 1994), profusely illustrated with color plates, presents the first expansive work dedicated to the relation between Vicús and Moche, much of it focused on discussion of the stylistic features and manufacturing techniques of the ceramics and metals. The complex situation suggests that the Moche expansion along the north coast was not a simple conquest, as has often been posited, but exhibited nominally pacific relations well into Moche's era as a dominant culture.

An equally intriguing idea, presented most forcefully by Donnan and Castillo (1994b), is that separate northern and southern Moche polities arose during the culture's heyday, between A.D. 100 and A.D. 750. Relying primarily on fine ceremonial ceramics, they trace a chronological development in the northern area that paralleled that of the south. They further elaborate Kutscher's idea that militarism, which has often been viewed as the means of Moche expansion, was directed largely toward capture of pris-

oners for sacrifice. Shimada (1994a, b) observes that the concept of distinctive northern and southern Moche regions has been part of the discussion of north coast prehistory for 30 years or more and suggests that the separation was not limited to the Moche era. Bawden (1994) proposes that the iconographic and settlement evidence suggests that multiple Moche polities actively competed among themselves in a more aggressive fashion than ritual warfare allows. He further emphasizes a principle at the core of some of the Andean literature: cross-cultural evolutionary models are inappropriate to explain change in the Andes, because they oversimplify cultural dynamics.

There is a long history to the view that an elaborate elite ideology underwrote Moche expansion and provided the social glue that held the culture together. New physical remains are now allowing archaeologists to examine how different sources of power—whether political, ideological, social, economic, or military—may have been linked in Moche leadership. The tomb complex of the Lords of Sipán, a northern Moche era site in the Lambayeque Valley, stands as one of most spectacular archaeological finds of all time in the Americas. Since 1987, Walter Alva, collaborating with Donnan, has excavated and published the extraordinary array of mortuary materials recovered from a complex of moderately sized, superimposed adobe mounds (especially Alva and Donnan, 1993; see also Alva, 1990, 1992; Donnan, 1990c). The region is recognized as the source of some of the world's finest artisanry in metals (Lechtman, 1991), stone, and shell; the Sipán burial furniture only augments that perception. The materials include fabulous items of personal adornment, such as necklaces of gold and silver peanuts, golden spiders, earspools, breastplates, scepters, and a full woven suit of golden plates.

Alva and Donnan interpret the principal individuals in the three large Sipán tombs—two adult males and one adult female—as figures represented in a scene in Moche iconography called the Sacrifice Ceremony, apparently related to sacrifice of human prisoners. Castillo and Donnan (Castillo, 1993; Castillo and Donnan, 1994; Donnan and Castillo, 1994a) report another rich set of burials at San José de Moro, in the nearby Jequetepeque Valley. In two tombs, adult females figured as the central individual, each dressed as Figure C, identified as a priestess in the same Sacrifice Ceremony. Those remains, and the splendid murals unearthed at the Huaca de la Luna at Moche (Uceda *et al.*, 1994) and Huaca Cao Viejo (Franco *et al.*, 1994), provide evidence for a widespread melding of ideological and social leadership in a set of elite individuals of both sexes, apparently linked to militarism and human sacrifice.

Despite the enormous corpus of materials recovered from Moche burials, osteological analyses have seldom been used to examine the social and

biological foundations of Moche life. That situation is attributable largely to the appearance of an overwhelming proportion of Moche objects through looting and the art market, but archaeologists also have excavated many Moche tombs over the decades. Verano's (1994) study of the skeletons from Pacatnamú and Sipán is thus a welcome start to the scientific study of Moche osteological remains. He uses variations in the facial structure of groups of skeletons to suggest that kin were interred together at Pacatnamú; he further draws on pathological data to argue that the Moche enjoyed an active life and were adequately nourished.

Similarly, archaeologists have long known that many Moche ceramics were mass-produced, often by use of molds, but have only sketchily documented that process through study of the sources of production. That situation is partially redressed through Russell and co-workers' (1994a, b) investigations at the production center of Cerro Mayal, in the Chicama Valley. The materials recovered at that site show intensive production of a wide range of ceramic objects, from utilitarian pots to figurines and ceremonial forms. The authors argue that the location and character of production are what would be expected from independent specialists, not artisans working directly for the elite sector of society.

The rich Moche iconography also remains a fertile ground for interpretations of the sacred in prehistory (e.g., Bourget, 1994). On the basis of analogous imagery in Cupisnique (i.e., the coastal antecedent to and contemporary of Chavín) and Moche art, Cordy-Collins (1992) argues that the decapitation represented in Moche iconography had antecedents in earlier cultures. She argues persuasively for the retention of beliefs over the long term, crossing the kinds of stylistic boundaries that archaeologists typically use to distinguish cultures from one another. In an approach that complements the traditional analysis of iconography for mythical content, Campana (1994) examines the evidence in Moche ceramics for the representation of craft production itself. He suggests that the layout of craft workers and the nature of their products reflect both the organization of specialized production and the sacred importance of the crafts. His work is conceptually analogous to the studies of metallurgists, who suggest that technological advances arose from cultural goals (see below). Similarly, the Sipán and San José de Moro finds have allowed archaeologists to link painted images and real humans so attired in tombs, opening the door to rethinking the relationship of illustrated figures to humans, nature, and the supernatural in Moche culture.

The last century of the Moche era was fraught with massive disruptions, perhaps both environmental (e.g., El Niño events, drought, and tectonic uplift [see Moseley, 1992a; Shimada *et al.*, 1991]) and social (e.g., resistance to a top-heavy sociopolitical elite). In the last phase of the era,

called Moche V, the old center of power in the Moche Valley was largely abandoned, and an effort was made to establish a new urban center at Pampa Grande, in the Lambayeque Valley. Shimada's (1994b) volume on Pampa Grande is the first major work to describe the nature of a Moche city, breaking the trend from a century's focus on ceremonial, mortuary, and craft studies. This fine volume also provides the most comprehensive overview of the nature of Moche society in the English literature, although his suggestion that no Moche polity had attained a state-level organization until Moche V (largely in keeping with Schaedel's view of Moche as being organized at a chiefdom level) will be disputed by a fair portion of Andean archaeologists.

Emergent Complexity on the South Coast: Paracas and Nasca

The south coast of Peru experienced a florescence of early social complexity in many ways comparable to that of the central and north coasts, from the end of the first millennium B.C. through the midfirst millennium A.D. The two principal archaeological cultures, known as Paracas and Nasca, produced distinctive crafts, many of which deserve a place among the finest objects of the prehispanic Americas. Paracas culture has been renowned primarily for the extraordinary textiles from the Paracas Cavernas and Necropolis cemeteries, excavated in the 1920s by Tello and Mejía, and less so for finely crafted ceramics. Sole-authored and edited volumes by Paul (1990, 1991b) continue in the tradition of focusing on Paracas largely through craft goods. Introductory papers by Paul (1991a) and Daggett (1991) help considerably in explaining the chronology and context of our present knowledge of the material culture. Individual papers then explore the imagery (Paul, 1991c; Peters, 1991; Wallace, 1991) and physical character (Frame, 1991; Jakes, 1991) of the textiles.

Remarkably, until recently we still knew relatively little about the society that produced such magnificent crafts. Massey's (1991, 1992) and Canziani's (1992) discussions of the habitation and ceremonial architecture of Paracas sites are illuminating, as they are able to document the formation of settlement hierarchies and shifts in the locus of power over time. They, along with Silverman (1994b), suggest that the standing ceramic chronology no longer holds up and offer suggestions for regional variations and refinements of the chronology. They also suggest that we will have to revise our perceptions of social relations among the south coast's inhabitants, although they differ over the degree to which ideological or political power provided the foundations of social cohesion.

The work by Silverman and her colleagues (e.g., Silverman, 1993a, b) on Nasca culture sites and the center of Cahuachi constitutes the most comprehensive regional assessment of that era to date. Cahuachi itself consists mostly of 150 ha of monumental architecture and open plazas built among natural hills. The scarcity of permanent residential remains, the votive offerings (Browne *et al.*, 1993), and the generally ceremonial nature of many of the artifacts (although compare Phipps, 1989) recovered in Silverman's excavations suggest to her that the site was more a focus of periodic rituals than an urban center. She proposes that Cahuachi, like Pachacamac and perhaps Batan Grande and Pacatnamú, served as a pilgrimage center for social groups identifying themselves with one of the site's several monuments. Complementary surveys in the Río Grande de Nasca and Río Palpa drainages have recorded hundreds of sites, many belonging to the Paracas and Nasca eras (Browne, 1992; Silverman, 1994a). Despite the presence of apparent urbanization, craft specialization, marked social differentiation, and massive public constructions, Silverman argues against the existence of a state in Nasca. Instead, like Schaadel (1988), she favors a view of social integration that depended more on kinship, reciprocal obligations, and ceremonial relations, rather than on hierarchical power and class.

Nasca culture, of course, is best known for its extraordinary geoglyphs, or ground drawings. As striking as the Nasca lines are, they are only the most elaborate of myriad figures executed on the earth's surface from northern Chile to northern Peru (e.g., Silverman, 1990; Wilson, 1988). Recent research at Nasca by astronomers and archaeologists has led to a re-evaluation of the nature and chronology of the lines (especially Aveni, 1990). The most important chronological refinement is the attribution of most of the plant and animal figures to the Nasca era, whereas the geometric figures and almost 1000 straight lines are now thought to pertain to the succeeding Early Intermediate period and Middle horizon (Aveni, 1990; Parker *et al.*, 1992; Silverman and Browne, 1991). The recent studies largely reject the idea of the lines as a giant calendar and find little to support notions of complex geometry or numerology in the figures. Instead, the images are now considered more likely to have been sacred spaces where ceremonies were conducted, perhaps to reinforce bonds of kinship or mutual responsibilities (Urton, 1990).

Other Regions

Studies of societies north and east of the Moche region are far more rare in the recent literature. Rosas (1992) describes the intensification of

agriculture in Ancash, through the construction of terraces from ca 100 B.C. to A.D. 500. In a provocative paper, Gero (1991b) leads an as yet lonely advance of deconstructionist philosophy into Andean prehistory. She proposes that there are multiple ways of interpreting facts about the past and that prehistory cannot be science. From that viewpoint, prehistory can profitably be approached as narrative, which she essays for aspects of feasting and reciprocal labor relations during the Early Intermediate period of the Callejón de Huaylas. Farther north, Stemper (1993) describes the rise of social complexity on the Ecuadorian coast along the Río Daule. He examines evidence for intensification of agriculture through raised-field systems, the presence of a small amount of exotic artifacts, and mound-building. He argues for the construction of raised fields as early as 400–200 B.C., and for the rise of chiefdoms by A.D. 400–600 that persisted until 1600.

EARLY HIGHLAND STATES: TIWANAKU AND WARI (A.K.A. THE MIDDLE HORIZON)

In the mid-first millennium A.D., two urban powers held sway in the Andean highlands. Tiwanaku, situated in the Bolivian altiplano, and Wari, in the Ayacucho Valley of southern Peru, were the centers of at least partially coeval polities. Their relationship has puzzled Andeanists for decades, for their material cultures exhibit similar iconographies, but fieldwork has yielded little material evidence of direct contact. Conversely, there is much evidence for interaction between Wari and other areas in the Peruvian highlands, and between Tiwanaku and areas to the south, and both established a presence in the coastal Moquegua Valley. In the last couple of decades, archaeologists have worked hard to clarify the nature of each urban center and its impacts on its hinterlands. The results of the fieldwork are seeing fruition in various publications, though many key questions remain to be resolved.

Tiwanaku has been the center of the grandest-scale, full-time archaeological project in the Andes over the last couple of decades. Work at the city actually began a century ago and has been conducted intensively for the last 20 years by Bolivian archaeologists directed by Ponce Sanginés (1990) and his colleagues. Their studies, many published well before 1990, have been directed largely to excavating the central, ceremonial part of the site. The intent has been to describe the layout and improve the chronological understanding of the site's development, with the goal of improving culture history and explaining the nature of the core society. A second major team, directed by Alan Kolata and associates, has published several

important articles and book-length publications (e.g., Kolata, 1991, 1992). That research on Tiwanaku has been directed toward a number of integrated themes: the economic (especially agricultural) foundations of the Tiwanaku polity, its political and ideological organizations, and the nature of its expansionism. Kolata's overview volume (1993a) is the most up-to-date, comprehensive source on the nature of the settlement, its rise to power, and its relations with neighboring peoples.

International members of the two major projects also have furthered the long-term work of Bolivian archaeologists by exploring the nature of the ceremonial core of Tiwanaku. Arellano L. (1991) describes a series of excavations in several megalithic architectural sectors and monuments, such as the Akapana pyramid, the Puma Punku mound, and the Putuni elite residence. Excavations by Manzanilla and her colleagues at the main pyramid of Akapana have uncovered a series of dedicatory human and animal burials (Manzanilla *et al.*, 1990; Manzanilla and Woodard, 1990). Analysis of the iconographic and other features of the distinctive Tiwanaku-style ceramics also is a theme of enduring interest (e.g., Cook, 1994; Girault, 1990).

Both Ponce's and Kolata's descriptions of the center explain the layout of Tiwanaku in terms of recapitulation of sacred geography and principles of social organization, such as duality, quadripartitioning, and cardinal orientation (see also Reinhard, 1991). Most scholars who work at the site share their view of a potent central elite, who used their power to maintain dominance and to undertake monumental architectural and agricultural reclamation projects. In contrast to Kolata's view of a strong political bureaucracy, Janusek (1994) proposes that the central polity was organized around extravagant ceremonial activities, much in keeping with Geertz's view of the Balinese state as theater. Despite their shared perceptions of a powerful elite at the state's core, there is far more room in recent explanations for a more balanced, mutually beneficial relationship between Tiwanaku and its hinterlands than has been the case in many previous works.

The altiplano subsistence economy that sustained the city and its hinterlands mixed agricultural and pastoral bases. Several publications analyze the vast land improvement projects that were undertaken along the margins of Lake Titicaca (see also Environment, Subsistence, and Society, below). Their approaches treat technical features (e.g., Ortloff and Kolata, 1989), chronology and organization (Erickson, 1992, 1993b; Kolata, 1991); climatic effects on the decline of the system (Ortloff and Kolata, 1993), and use of the system following Tiwanaku collapse (Graffam, 1992). The various investigators concur that the scale of the drained field systems was truly remarkable but differ markedly in their interpretations of the timing of

construction and management of the fields. Erickson argues that major constructions antedated the surge of Tiwanaku power (during Chiripa), declined in scope during the urban apogee, and resurged following the city's collapse. Graffam also argues that the Late Intermediate occupation of the fields around the Pacajes area was more extensive than during Tiwanaku's heyday. Both argue that the quotidian management of the fields rested primarily in the hands of local kin groups.

In contrast, Kolata and Ortloff (1993) argue that the Tiwanaku state was responsible for most of the construction and use of the lands, as part of a centrally managed, intensified political economy. They see the collapse of centralized political power and of the field systems as fundamentally linked. Recent survey along the western margins of the lake (Stanish, 1994; Stanish and Steadman, 1994) tends to confirm elements of both arguments. That is, extensive field systems were already constructed before the rise of Tiwanaku as a major power, but the greatest expansion of the raised fields coincided with Tiwanaku's imperial era, and a general abandonment of the fields corresponded with the collapse of the urban center. From an explanatory perspective, Kolata, Ortloff, and Stanish agree that the greatest expansion of the field systems was part of a political economic strategy undertaken by emergent elites.

Coupled with research at the urban center have been several important studies of subsidiary settlements, especially Lukurmata. In the first of two monographs on the site, Ponce Sanginés (1989) provides a detailed examination of research at the settlement, one of the key subsidiary towns in Tiwanaku's immediate hinterland. The authors of the second volume (Kolata, 1989) provide a preliminary discussion of regional settlement, the central acropolis, the residential sectors, and the agricultural fields. Bermann's (1994; see also Janusek, 1994; Wise, 1993) book affords the most comprehensive study of the site's occupation, its economic activities, and ties to Tiwanaku. The book provides a fine example of combined settlement study and problem-oriented research, especially with respect to craft production and links between the urban elite and a subsidiary populace. A related series of studies of the underwater archaeology of Lake Titicaca has analyzed lake sediments for reconstruction of climatic fluctuations and explored artifactual and architectural deposits in the southern lake (see Ponce Sanginés, 1990; Ponce Sanginés *et al.*, 1992; Reinhard, 1992).

The reach and nature of an expansionist Tiwanaku polity have received a great deal of attention recently, on both sides of the Andes as well as to the south. Estévez (1992), for example, has examined the development of farms in the warm-weather areas to the east, under Tiwanaku dominion. The affiliated region most fully studied is the Osmore (or Moquegua) Valley of the far south Peruvian coast. A wide range of publications, many

produced under the umbrella Programa Contisuyu, has explored the various facets of the Tiwanaku colonization of the middle valley about A.D. 400 and the subsequent intensified use during Tiwanaku's heyday, ca. A.D. 750–1000 (e.g., Anders, 1990; Bawden, 1990b; Moseley *et al.*, 1991; Rice *et al.*, 1989; Watanabe *et al.*, 1990, Vol. 2). The principal intent of the occupation seems to have been to exploit the valley's agricultural potential for warm-weather crops, in much the same way as the Cochabamba Valley on the eastern Andean slopes was colonized. Of particular interest to the researchers are the ceremonial complex at Omo and imported altiplano ceramics that were likely used in ceremonial hospitality. The researchers working in the Osmore Valley use that evidence to argue for a direct and intensive state role in the occupation, especially after A.D. 750 (Goldstein, 1990, 1993). Vela V. (1992) suggests that Tiwanaku had a comparable impact on settlement patterns in the Caplina (Tacna) Valley, just to the south of Osmore. Attracted by the agricultural productivity of the mid-valley, the altiplano polity established colonies to take advantage of the warm weather environment.

Wari, the other major highland city of the midfirst millennium A.D., lies in the heartland of the insurgent Shining Path movement. That circumstance has been unfortunate for fieldwork, but a boon to publications of accumulated research. Isbell and McEwan's (1991b) substantial edited volume, *Huari Administrative Structure*, provides the most detailed evaluation of the urban center and its hinterlands published to date. Even (or maybe especially) among Wari-era specialists, there is little unanimity on the nature of the polity, its extent, or its relations with societies whose cultural remains contain Wari materials. The variety of interpretation is partly reproduced in the volume and aptly summarized by the editors in an introductory chapter. A subsequent series of chapters explores the nature of the urban center, largely from an architectural standpoint. A major concern is the development of the site, which arose piecemeal, although individual sectors contain much evidence for planning and renovation (Benavides C., 1991; Bragayrac D., 1991; Isbell *et al.*, 1991). Isbell *et al.* (1991) suggest that the megalithic architectural style was adopted directly from Tiwanaku, but Knoblauch's (1991) ceramic chronology suggests that dressed-stone masonry and Tiwanaku iconography were adopted sequentially, not simultaneously.

There is little doubt that Wari's populace had an impact on regions many hundreds of kilometers from the urban center. The nature of that impact remains in question, with various authors favoring militaristic, economic, religious emulative or evangelistic, and political foundations to the Wari presence from the Peruvian coast and north-central highlands. Two principal kinds of Wari sites are found in the hinterlands: large planned

compounds and oracular or offertory locales. The most striking feature of Wari installations is their architectural standardization, which most authors take to imply imposed, central planning and construction. Their regularity and the broad expanse of highlands in which such sites are found are the strongest part of the argument for an expansive Wari polity. Of the modern authors, Lumbrales (1989b) and Schreiber (1992) argue most strongly for a far-flung Wari empire, which ruled its provinces indirectly. The principal evidence in support of this view is the geographic distribution and standardization of the Wari-style architecture. Schreiber relies less heavily on the traditionally used evidence of ceremonial caches, such as that at Pacheco (Nasca Valley, south coast of Peru), and mortuary vessels.

The site of Pikillacta, at the southern end of the Wari domain, is an impressive example of a designed, rectilinear settlement laid over rolling terrain. McEwan's (1991; see also Cook, 1992) excavations at the site found evidence for residential and ceremonial activities that call into question the storage function usually assigned the cellular architecture; he instead favors residence of military or perhaps corvée personnel. Anders (1991) also found little evidence to support the notion of centralized storage at the Wari site of Azángaro and offers the novel interpretation that the architecture's layout served as a large-scale calendrical and ritual device. Several papers on the nature of the Wari presence in the north-central Peruvian Andes take issue with the Wari-centric approach. Both John and Theresa Topic argue that the apparent Wari intrusion is better understood as a complex arrangement between the indigenous Huamachuco polity and Wari (J. Topic, 1991; T. Topic, 1991). There is little evidence for military occupation or direct rule, but some persuasive architectural evidence exists for joint efforts at constructing the major unfinished site of Viracochapampa. They suggest that long-distance exchange and religious diffusion more readily account for the coexistence of both native and foreign powers in the region. Similarly, Isbell (1991) argues that the extensive constructions at Honcopampa, in the Callejón de Huaylas, resulted from a blending of local and Wari architectural styles.

Relations between Tiwanaku and Wari remain a matter of hot debate. Many scholars view the two urban centers as nonbelligerent rivals, each focused away from the other in its expansion. Others, especially those working in Bolivia, suggest that Wari was a kind of subsidiary of or spin-off from Tiwanaku. They point to the half-millennium of antecedent development at the altiplano center and to the adoption of megalithic architecture and a style of portable artifacts in the Peruvian city that seemingly drew from Tiwanaku (e.g., Arellano, 1992). That view is challenged by scholars who see Wari arising autonomously from local antecedents (e.g., Isbell *et al.*, 1991; Schreiber, 1992). Conklin (1991) also draws attention to the

marked differences in architectural form and planning between the two sites that point to quite different traditions of construction and the use of urban space. Cook (1994) and Stone-Miller (1992a) have addressed the relationship between the material cultures of Wari and Tiwanaku, especially in ceramics and textiles. Drawing from study of the iconographic content and style of the two societies, Cook finds strong evidence for a mutual source of ideology, expressed in a surprisingly limited number of key figures. At the same time, she argues that the two societies developed their own polities in parallel, with neither one serving as the source for or dominant power over the other.

The only location where there is substantial evidence of contact between the two polities is Peru's south coast (see Watanabe *et al.*, 1990, Vol. 2; see also above). There, both Tiwanaku and Wari seem to have established a presence, the former in midvalley and the latter upvalley (Flores E., 1990; Owen, 1993). Despite the clearly defensive nature of the Wari occupation, researchers are still not ready to define the precise character of the interaction between the two polities in the valley. What is clear is that the occupation of the middle and lower valley flourished more fully *following* the Tiwanaku collapse, perhaps as a consequence of rapid immigration (Owen 1993). Recent research at the two highland centers has thus shed much light on their internal character and subsidiary domains, though opinions are hardly consensual. The nature of their relationship remains largely a mystery, though their apparent mutual avoidance, at least in terms of exchanged material goods, has been reinforced.

THE LATE INTERMEDIATE PERIOD

The last three to five centuries before the rise of Inka power witnessed marked diversity in the scale and complexity of Andean societies. On the north coast of Peru, the complex Sicán and then Chimú cultures held sway, while highland societies were far simpler and locally contentious. Just as views of the Moche have changed radically in recent years, so has the transition from the Moche to the empire of Chimor. The immediate heir to the northern Moche Valley polity was a Sicán culture society, which occupied the Sullana to Chicama Valleys. The work by Shimada and his colleagues on the Proyecto Arqueológico Sicán has yielded a great deal of information on the societies of the era (e.g., Shimada, 1990, 1994b; Shimada and Merkel, 1991, 1993; Shimada *et al.*, 1990, 1994). They have shown that the first major ceremonial centers at Pampa Grande and Batan Grande in the Lambayeque Valley were Moche culture, but by A.D. 700, Sicán societies supplanted the Moche. The height of Sicán occurred A.D. 900–

1100, when a vast series of pyramid complexes was erected, including Huaca Chotuna and Huaca Chornancap (Donnan, 1990b). About 1050–1100, there was extensive flooding, the core Sicán precinct was burned, perhaps deliberately, and the power center shifted west to the area around Túcume, which remained the focus of regional power through the Inka era.³ Starting in 1991, fitting successors to the Sipán tombs were excavated at the likely Middle Sicán capital of the site of Sicán. Like their Moche predecessors, the remarkably wealthy burials contained an array of gold, gold-copper alloy, ceramic, shell, stone, and textile objects (Shimada and Merkel, 1993). Intriguingly, the shafttombs at Huaca Loro were placed in an orderly manner around the main pyramid and not in it, as was the case at Sipán. At present, Sicán architecture and crafts are better understood than the nature of the society (Shimada, 1990). Sicán metallurgy, the culture's most distinctive craft, was technically, aesthetically, and organizationally advanced (see below).

In the last century or so before the Inka rise to power, the Chimú polity, often called an empire, stood as the most powerful sociopolitical entity in South America. As with other polities in the Andes, a recent volume with several contributors has assessed the nature of the empire from multiple perspectives (Moseley and Cordy-Collins, 1990). The strengths of the book are the combination of archaeological and documentary information, and individual chapters that insightfully assess particular aspects of the society. Of special interest are the chapters that discuss, largely from an archaeological viewpoint, how the empire expanded and the character of particular subregions brought under central control (e.g., Mackey and Klymyshyn, 1990; Richardson *et al.*, 1990; T. Topic, 1990). Shimada (1992) also describes the various archaeological cultures that existed coevally during the coast's Late Intermediate period (Sicán, Chimú, Chincha) and reinforces the point that culture area and polity must be separated analytically.

Far less attention is paid to the capital Chan Chan these days than in past years, though Narváez (1989) evaluates the stratigraphic evidence for the chronology of construction, and Kolata (1990) and Conklin (1990) provide valuable overviews of the core, especially from an architectural perspective. Drawing from an analysis of architectural features, Cavallaro (1991) takes issue with their interpretation of a linear sequence of construction of the main compounds (*ciudadelas*) and argues that the compounds were built as pairs, in keeping with Andean dual social organization. The development of Chimú architecture also is considered by McEwan (1990), who argues that the shift from pyramid-dominated ceremonial cen-

³Comprehensive publications on Túcume are in press and will be reported on in a subsequent review article.

ters of the Moche era to the enclosed rectilinear compounds of Chimor was a deliberate imitation of Wari-style architectural forms; he interprets the logic of the shift as part of a process of secularization of authority. Using an analysis of patterns of access within Chimú *ciudadela* architecture, Moore (1992) shows that now-conventional explanations of the functions and central control of particular forms (e.g., U-shaped constructions called *audiencias*) are based on inaccurate perceptions of layout; he suggests that archaeologists need to rethink the issues of control and storage. From an alternative perspective, Pillsbury (1992, 1993) examines the friezes of the capital's elite architecture as an element of the visual display of status. The coeval monumental architecture at nearby sites is often underplayed, a situation Navarro (1991) addresses in his research at Huaca Tacaynamo. He suggests that the constructions at that site form part of the continuity from Moche to classic Chimú, so that the transition from one culture to the other was not as abrupt as it has often been portrayed.

Recent work on Chimú economy continues to focus on irrigation agriculture and craft production. Ortloff (1993) provides an overview discussion of the technical nature of irrigation and the state's involvement in its planning and management. He underscores the challenges of maintaining large-scale irrigation systems under conditions of river downcutting, tectonic uplift, siltation, drifting sands, and the flooding resulting from El Niño events. The discussion is especially useful in chronicling long-term adaptations and innovations in complex irrigation systems in the face of changing physical circumstances. In a specific case, Moore (1991) argues that temporary agricultural settlements were founded as part of a state strategy to counter the effects of environmental disaster. J. Topic's (1990) article on craft specialization underscores the concentration of craft workers under the watchful eye of the Chimú overlords. McClelland (1990), Cordy-Collins (1990), Iriarte B. (1992), and Zevallos Q. (1992), among others, address the iconographic content of the material culture, which emphasizes maritime, mythical, and elite-related elements. Their work shows that many important features in graphical representations had centuries of antiquity even then. That situation reinforces the notion that key cultural concepts apparently transcended archaeological periods, although the precise meaning of those ideas may have been modified over time.

Beginning with the Late Intermediate period, investigators are able to draw on both archaeological materials and written accounts that recorded oral histories. Several chapters of the *Northern Dynasties* volume take on the challenging task of assessing the relationship between history and archaeology, especially with respect to dynastic history (e.g., Conrad, 1990; Donnan, 1990a; Moseley, 1990; Zuidema, 1990a). Other authors use the documentary sources to examine the region's social organization just before

and under Inka rule (Netherly, 1990; Ramírez, 1990; Rostworowski, 1990). Most conclude that the often mythical accounts contain features with historical validity, but differ as to whether those elements are structural or historical. That debate, as we will see below, resounds throughout contemporary studies of the Inkas.

Peru's highlands and south coast also have been the subject of considerable attention for the immediate pre-Inka era. Julien's (1993) close documentary and archaeological analysis of the Cajamarca region show that several polities occupied the region, which became a province under Inka rule. Some settlement centralization apparently existed in at least three of the seven provincial subdivisions. Even so, the pre-Inka societies do not appear to have been unified politically before the Inka arrival, although some evidence suggests that they shared an ethnic identity. The kinds of high elevation, defensive settlements characteristic of many regions of the Peruvian sierra also have been reported for the Chanka domain in Andahuaylas. Valdez *et al.* (1990) interpret the Chanka settlement pattern as an indicator of the political disorder that characterized the southern Peruvian Andes following Wari's collapse. Working in the difficult eastern montaña of Chachapoyas, Schjellerup (1992b) describes a series of small settlements also located near topographic high points. In contrast to other authors working on the Late Intermediate, she argues that the Chachapoya societies placed their communities on elevated topography because those locations were home to powerful spirits (*apu*) in the animistic highland religions.

Farther south, the Upper Mantaro Project has been concerned especially with the long-term development of local economies, political forms, and social hierarchy among the Xauxa and Wanka ethnic groups and their transformation under Inka rule (see also below).⁴ Hastorf (1990b, 1993) has investigated the trajectory of local agricultural economies and the rise of sociopolitical elites from the Early Intermediate through the Late Intermediate periods. Drawing from quantitative models, ethnographic study, and archaeological data, she argues that power among highland societies of the time was constantly negotiated among many parties. Elites manipulated agricultural production and consumption to their advantage, but households maintained control over production for their own use. In a complementary set of works (e.g., Costin and Earle, 1989; Costin *et al.*, 1989; Russell, 1988; Sandefur, 1988), other project members show how elites controlled the technology and goods that denoted status differences in the chiefdom-level polities. Among the key materials were personal adornments of silver and copper made by attached specialists, choice foods, and the large storage and serving vessels used in political feasting.

⁴An edited volume on this topic is in press and will be treated in a future essay.

The intensive study of the Peruvian south coast seen for earlier eras also has occurred for the post-Tiwanaku eras, called Estuquiña and Chiribaya. Field research in the Moquegua area, in particular, has concentrated on settlement patterns, studies of household economy, and mortuary analysis. Stanish's (e.g., 1989, 1990b, especially 1992) publications have focused on the complementary use of resources by the region's multiple ethnic groups. His work and the contributions to Aldenderfer's (1993) edited volume are valuable as a demonstration of the gains to be made in understanding both daily life and regional patterns of resource use through household archaeology. Similarly, Owen (1993; see also Bawden, 1990b) evaluates the social transitions that occurred with the collapse of Tiwanaku presence on the south coast.

The mortuary analyses of coastal societies promise to be among the most insightful of all those conducted in the Andes. A study of a small sample of mortuary remains from the central coast suggests that the members of the population periodically suffered from dietary stress, especially when young (Mujica *et al.*, 1992). Studies from the Moquegua region describe hundreds of tombs that have been exhumed professionally. Their material goods and biological remains are considerably expanding our understanding of the relationship among diet, health, cultural practices with the human body, and social position (e.g., Buikstra, 1990; Clark and Williams, 1990; Guillen, 1992; Mujica, 1990b; Williams, 1990; Williams and Buikstra, 1990).⁵

THE LATE HORIZON: THE INKAS

The last few years have seen an upsurge of published studies on the Inkas, in part because the respite in fieldwork in Peru prompted by political unrest has provided researchers a chance to complete publications that had been long in process. Recent studies on the Late Horizon have been dedicated largely to three major themes: (1) comparative overviews of the material foundations of Inka rule across wide regions; (2) analysis of the Inka homeland around Cuzco; (3) and the effects of Inka incorporation on provincial societies. Researchers note that it is exceedingly difficult to recognize Late Horizon occupations without Inka ceramics or architecture and, for that reason among others, concentrate on the features of the era that are related to the empire. That approach differs notably from documentary

⁵I have been able to obtain only the summary articles listed here and thus cannot provide more detailed information on the theses, which contain far more extensive data and discussions.

studies, in which the nature of local societies is an important, independent subject for investigation.

Although this review focuses on archaeology, five worthy overviews of the Inka empire drawn from the documentary sources merit note. Both Rostworowski's (1988) and Pease's (1991) books on Inka sociopolitical and economic history provide valuable syntheses of the empire's formation accessible to readers who are not Andean specialists. Zuidema's (1990b) structural analysis of the core of Inka society is intended more for the Andean audience; even so, it is challenging reading. Patterson (1991) presents a Marxist assessment of the rise of the Inkas, focusing on relations of power and inequality. Finally, Pärssinen (1992) melds structural and historical approaches to assess the political formation of the empire. His analysis draws from the classic chronicles and local sources, in a useful effort to reconcile some of the contradictions found in the multiple versions of the rise of Inka rule.

The most comprehensive recent study of Inka archaeology is Hyslop's (1990) volume, *Inka Settlement Planning*, which complements his 1984 book, *The Inka Road System*. The first is both a good introduction to Inka archaeology and a source book for the specialist. Although the title suggests a focus on domestic architecture, the work actually describes a wide functional range of Inka sites. Among Hyslop's principal topics are the character of the imperial capital of Cuzco, organization of provincial centers, military sites, sacred landscape of water and rocks, and astronomical concerns in site planning. The strength of the work lies in its extensive coverage and in the presentation of detailed new surface work by the author on numerous sites. Another volume, by Morris and von Hagen (1992), is more generally pitched but provides a fine sketch of the nature of *Tawantinsuyu* and the antecedent societies that gave rise to it. A more topically focused work, but one that shares a comparative and regional perspective, is Levine's (1992) edited volume on *Inka Storage Systems*. It contains a mixture of previously published and new studies on a linchpin of the Inka provincial economy—the vast state storage facilities. Its authors provide theoretical arguments for the role of massive storage in the Inka economy, the technical features of storage, the spatial distribution of storehouses as a part of the imperial infrastructure, and comparison of state and household storage.

The archaeology of the Cuzco region itself in recent years is becoming more fully described, as it warrants, though comprehensive settlement patterns studies of the Cuzco basin remain to be completed and published. Heavenly bodies, especially the sun, moon, and certain key stars (e.g., the Pleiades), played central roles in Inka cosmology. It is therefore no surprise that the relationship among Inka society, astronomy, and the sacred land-

scape has been especially interesting to Inka scholars. Perhaps in no other field of Andean study are documentary sources and archaeological fieldwork so explicitly linked. In a series of writings inaugurated by Zuidema's doctoral thesis of 1964, Zuidema, Aveni, and their colleagues and students have investigated the layout of sacred conceptual lines, called *zeq'e*, that radiated out from the Temple of the Sun in Cuzco (e.g., Zuidema, 1977, 1981, 1983). The lines, described in several early colonial documents, provided a conceptual and physical framework for the layout of the empire and linked elite Inka society to a calendrical system. Zuidema argues that the sacred geography and social structure worked in an enormously complex ritual/kinship system whose details sometimes confound even the most diligent scholars.

Zuidema's intriguing propositions are balanced against several alternative examinations of the relationship between the conceptual and physical structure of core Inka space. Ziolkowski and Sadowski have written widely on Andean notions of time, calendars, and astronomy, most recently in two monographs (1989, 1992). Bauer and Dearborn (1995; Bauer, 1992c) also have recently completed an independent analysis of Inka astronomy, combining archaeological, astronomical, and documentary study. These scholars acknowledge a conspicuous debt to Zuidema's pioneering work but dissent on a number of key points (see also Farrington, 1992). The complexities of the disagreements are beyond this review, and the astronomical technicalities beyond this author, but it may be noted that the above authors take well-founded issue with some of Zuidema's propositions, e.g., the notion of a sidereal-lunar calendar, a calendrical reliance on solar zenith passages, and the linear character of the *zeq'e* system. The fieldwork that the various authors are conducting promises to help resolve some of the empirical issues, though arguments based on rereading the documents are likely to continue into the indefinite future.

Several other scholars also have contributed works that link written and archaeological evidence on Inka monuments and sacred geography. Rowe (1991) provides a constructive discussion of the monuments of central Cuzco, although his acceptance of the puma form as the basis of Cuzco's layout continues to be questioned (Barnes and Slive, 1993). The most comprehensive work on the subject is van de Guchte's (1990) thesis, which employs many of Zuidema's premises concerning cosmic space and the positioning of sacred locations (see also McEwan and van de Guchte, 1992). Building on her work at the aristocratic estate of Callachaca, Niles also reviews the layout of Inka sacred space (1992; see also 1987). Sherbondy (e.g., 1992, 1994) has contributed an additional series of papers that describe how Cuzco's social organization was ceremonially and practically linked to management of water and land in the Cuzco basin. Following up

earlier studies that placed the stylistic source of imperial architecture in societies living around Lake Titicaca is Huidobro's (1992) examination of ceramic ties between Tiwanaku and Cuzco; he suggests that the artifactual and architectural evidence implies important contacts between the altiplano peoples and those of the Cuzco basin well before the emergence of Inka imperial power.

Regional studies near Cuzco also shed light on the nature of the late pre-Inka and imperial eras. Heffernan's (1989) thesis presents a long-term, regional settlement study in the Limatambo region, west of Cuzco. His work on the preimperial era shows only a moderate concern for defense and only a modest settlement hierarchy. Bauer's (1991, 1992b) work in the Paruro region, about 60 km south of Cuzco, shows that an Inka polity may have emerged as a regional power sometime after ca. A.D. 1200 and that the imperial era may have actually begun by A.D. 1400 or earlier (see also Bauer and Stanish, 1990). His analysis of radiocarbon dates indicates that our notion of a brief span for the imperial era—about a century—may have to be modified. In a fascinating study of the myth that placed the Inka origin in the Paruro region, at Pacariqtambo, Urton (1991) describes how local and royal Inka kin groups manipulated history to gain advantage in the early colonial years. His work is sobering for investigators attempting to use documentary sources as literal grounds for archaeological analysis.

Kendall and her associates have been conducting fieldwork in the Cusichaca region, just north of Cuzco, for over 20 years (e.g., Kendall, 1994; Kendall *et al.*, 1992). Many of the finer Inka planned sites, including several described in the documentary records as estates of the Inka royalty and nobility, are found there. Their work has yielded both detailed information on the layout and architecture of the sites and the basis for chronological sequencing of the development of Inka material culture. Ollantaytambo, a site that may have been a royal estate of the emperor Pachakuti, has attracted substantial attention over the years, both professionally and touristically. Situated in the Urubamba River Valley about 50 km northwest of Cuzco, Peru, the settlement was likely a royal estate of the emperor Pachakuti and, later, the seat of the neo-Inka regime of Manqo Inka that unsuccessfully resisted the Spanish conquest. The painstaking analysis of the buildings and terraces at that settlement, by the architect J.-P. Protzen (1993), provides the best study yet of the means by which the truly spectacular and varied Inka imperial architecture was raised. Another architect, V. Lee (1989), has described a series of roads and Inka sites slightly farther afield, in the Vilcabamba region. The area, on the Andean slopes northwest of Cuzco, was reportedly conquered early in the Inka expansion and then served as a base of operations for Inka resistance until about A.D. 1572.

Although archaeological study of provincial life does not yet approach the scope of historical Inka research, it has become a prominent element of Andean archaeology. Many provincial Inka studies explicitly combine archaeological and documentary study, building on an approach championed 25 years ago by the Huánuco Project. A rewarding series (especially Julien's synthesis) of integrative articles is found in Malpass's (1993) edited volume, which contains studies of four provinces, one on Cuzco, and two synthetic approaches. Even though many of the studies are regional or comparative, contrasts are typically drawn only within the Andes, reinforcing the inward-looking focus that runs through the literature on the Inkas. Dillehay and Netherly's (1988) volume on Inka frontiers combines written and archaeological sources to examine the strategies of frontier relations. The various contributors provide detailed empirical information on the imperial infrastructure, sociopolitical relations, and military strategies for the entire Andes.

Several other books and theses on provincial regions are helping develop a more richly detailed vision of the empire. Brown's (1991) thesis and Matos Mendieta's (1994) volume on Pumpu, a major provincial center on the Inka highway through the Peruvian puna, provide a complement to Morris and Thompson's (1985) earlier study of the remarkable center of Huánuco Pampa, just to the north. Both sites were intrusive, self-contained settlements that administered local societies and supported grand-scale Inka activities, such as housing the royal entourage, bivouacking armies, and fêting regional elites. The studies of Pumpu, based on surface architecture and limited excavations, add significantly to our understanding of the layout and activities of planned imperial settlements. Sandweiss's (1992b) study of Chincha fishermen under Inka rule provides a rare and welcome archaeological look at the Inka occupation of the coast. According to 16th-century sources, the region's elites were especially favored by the Inkas, but as Sandweiss points out, discerning that relationship from archaeological remains is a conspicuous challenge. In the more southerly Peruvian Andes, Sciscento's (1990) thesis on settlement patterns in the Chuquibamba Valley compares the nature of the Wari and Inka imperial occupations. At the far north end of the Inka domain, in the Caranqui region of highland Ecuador, Bray's (1991, 1993) research shows a much less intensive imperial occupation than seen farther to the south.

The Upper Mantaro Project directed by Earle and his colleagues has focused on how Inka incorporation affected the daily life of the Xauxa and Wanka populace of the central Peruvian Andes. Their fieldwork concentrated on settlement studies, excavations in residential households, and work at Inka installations. An overview book (D'Altroy, 1992) explores the political, economic, and military features of Inka rule, through study of Inka

facilities and key local sites; unfortunately, research at the disturbed provincial center of Hatun Xauxa was precluded by political unrest. Hastorf's (1990a) research explores the sociopolitical and biological effects of Inka occupation on agricultural practices and diet. Costin's (1990, 1993; Costin and Earle, 1989; Costin *et al.*, 1989) work provides closely argued theoretical and empirical arguments on craft specialization. Using ceramic and textile production as test cases, she describes changes in the organization of household and community labor that resulted from intensified production for the state. In both food and artisanry, the authors are able to show how Inka rule had different effects on subject peoples, depending on both their status and gender. A series of other papers explores the regional character of ceramic production for the state (D'Altroy and Bishop, 1990) and the political and economic linkages between the state and the subject populace (D'Altroy, 1994b, c; Earle, 1994; Earle and D'Altroy, 1989).

NEW TOPICAL DIRECTIONS IN ANDEAN RESEARCH

The preceding discussion has been organized along chronological lines, largely because researchers tend to concentrate on issues that are culturally or temporally focused. One of the more gratifying aspects of recent Andean archaeology, however, has been a shift toward more problem-oriented studies in which a key goal of the work is to address important theoretical issues. In the remainder of this review, I outline three of the more promising areas of study: environment, subsistence, and society; technology and society; and gender studies. Although none of these areas is novel to archaeology, the recent approaches taken in the Andes definitely mark a change in direction for research that invites more comparison with other regions.

Environment, Subsistence, and Society

The development of human societies in their relations with the variegated Andean environments is of enormous interest to archaeologists. A central problem concerns the relationship between subsistence intensification and the emergence of social complexity. The preceding sections have reviewed some pertinent issues, such as the relative dependence on maritime and agricultural resources of early coastal populations, the importance of maize in early farming diets, and the nature of raised field agriculture around Lake Titicaca. An additional series of questions nevertheless deserves its own section. Three related issues lie at the core of the problem: the causes of intensification, the organizational complexity needed to un-

dertake large-scale land improvements, and the social locus of control over the product (e.g., family, kin group, state). A number of investigators have shifted away from models that posited that population growth led directly to subsistence changes, especially the inception and intensification of agriculture. Some, in fact, argue that population growth is better explained as a consequence of increased agricultural production than as its cause (Zeidler and Pearsall, 1994, Introduction).

The study of prehistoric land modifications in South America has received a marked boost from the work on Bolivia's Llanos de Moja by Erickson, Estévez, and their colleagues (e.g., Erickson, 1993a; Estévez, 1992). Using photo interpretation and remote sensing techniques, they have been able to identify extensive areas of raised field agriculture dating to as long ago as 2000 B.P. Coupled with evidence from mounds and residential sites, their studies have begun to provide a better understanding of the scope and complexity of societies on the eastern side of the Andes. The researchers working there, in the Bolivian highlands, and on the Ecuadorian coast emphasize that some agricultural intensification and diversification is best explained from the perspective of families' efforts to minimize risk or improve productivity for household use (e.g., Erickson, 1993b; Rossen, 1991; Zeidler and Pearsall, 1994).

Other researchers argue that political competition also led to major efforts at intensification. Stemper (1993) suggests that elites in the Río Daule area of coastal Ecuador intensified agricultural production on raised fields. By the midfirst millennium A.D., he proposes, the production was used to acquire exotic objects whose use in ceremonial relations was parlayed into political power. For periods following the Early Intermediate, Hastorf (1990a, 1993; Hastorf and Johannessen, 1993), Kolata and Ortloff (Kolata, 1991; Ortloff and Kolata, 1993), and Stanish (1994) argue that many of the land improvements designed to intensify highland agriculture arose from elites' efforts to sustain their quests for power. A related argument is made by Moore (1991) and Ortloff (1993), who argue that major agricultural improvements were underwritten directly by the Chimú state. Documentary sources make it very clear that the Inka royalty and nobility developed landed estates, but it would not be surprising if such endeavors antedated the Late Horizon (see Kolata, 1991). Some of the Inka estates are among the most spectacular sites preserved today, e.g., Ollantaytambo, Pisac, Chinchoro, Juchuy Cossco, and maybe Machu Picchu (e.g., Niles, 1987, 1992; Protzen, 1993). Together, these arguments provide a more nuanced understanding of agricultural changes than has existed in the past.

Animal use also continues to be an important concern for researchers in the Andes. Two studies provide especially useful information on modern pastoralism that should help archaeologists interpret prehistoric contexts.

Flannery and co-workers' (1989) long-term study of llama herders in Ayacucho promises to become a classic in ethnoarchaeological research. Besides providing detailed descriptions of pastoral life, they evaluate the potential sustainability of distinct husbandry practices through computer modeling. The intent is to examine how biological features, kin ties, ceremonial relations, and ecological practices are interrelated. They conclude that the Ayacucho herders have developed a complex, balanced system that contains both cultural peculiarities and eminently practical acts. Tomka's (1994) study of Bolivian agropastoralists provides a detailed look at how microenvironmental conditions place changing demands on the location and scheduling of labor of mixed-strategy households. His work, based on field studies in two locations, provides a range of material correlates that may be expected for particular kinds of sites produced by a seasonally transhumant population.

Animal domestication and early pastoralism have been less intensively studied in recent years than in the past. Nonetheless, a number of studies, primarily from economic and ecological perspectives, continue to provide new models of how human and camelid populations became mutually adapted (e.g., Kuznar, 1990; Tomka, 1992). The role of faunal consumption in the daily diet and in feasting also continues to be an important concern, even apart from the maritime-terrestrial controversy of Preceramic times. Miller and Gill (1990) argue that, in contrast to the heavy Peruvian dependence on camelids for meat from the Archaic onward, populations in highland Ecuador relied mostly on deer meat until ca. A.D. 100. After that time, they began to exploit a previously undocumented form of llama, intermediate in size between modern llamas and alpacas. In contrast, remains from long-term coastal deposits were fairly diverse, deriving from smaller forest and arboreal fauna (Stahl, 1994). In a study of household consumption of fauna in the late prehispanic upper Mantaro, Sandefur (1988) documents marked status differences between elite and commoner members of society before the Inka conquest. Intriguingly, under Inka rule, the differences between the two statuses decreased in terms of the quantity of camelid meat consumed, but significant differences remained in the cuts of meat eaten or served and in the labor invested in preparation. She attributes those continuing differences to both the resources that the elites could command and to the role of the elites in sponsoring feasts.

Another cross-cutting theme concerns the impact of changes in environmental conditions on human society. This is a fruitful area for interdisciplinary research among archaeologists, geologists, zoologists, botanists, and paleoclimatologists. Most interest has focused on the effects on subsistence strategies of climatological events or longer-term fluctuations, especially El Niño episodes, floods, and droughts, and of tectonic movements

(e.g., Moseley *et al.*, 1992; Ortlieb and Macharé, 1992; Shimada, 1994b). It was noted above, for example, that some Valdivia occupations need to be rethought as coastal occupations, because tectonic uplift has moved the coastline away from the sites over the millennia (Damp *et al.*, 1990). Similarly, Clement and Moseley (1991) argue that tectonic movements caused the radical reduction of irrigated land in a section of the south coastal Moquegua Valley, especially following the Spanish invasion.

For over a decade, archaeologists also have noted that the end of southern Moche power, ca. A.D. 600, was associated with agricultural failure or environmental disasters. Through evaluation of the Quelccaya glacial cap core sequences, Shimada *et al.* (1991) link those calamities to three sixth-century droughts, especially to a severe dry spell between A.D. 563 and A.D. 594. They note that radical settlement shifts occurred at about the same time farther south along the Peruvian coast and suggest that several major cultural changes may thus have been tied to climatic perturbations. Alternatively, a great flood ca. A.D. 1050–1100 is postulated to have been a catalyst for a major shift in power in the succeeding Sicán culture (Shimada, 1992). Ortloff and Kolata (1993) also use the Quelccaya data to argue that chronic drought precipitated the collapse of the Tiwanaku state after A.D. 1000. They further propose that agricultural failures, resulting from the drought, tectonic uplift, and El Niño events, helped precipitate major changes in Chimú agricultural strategies and Chimú military expansion in the 12–13th centuries A.D. (Kolata, 1990; Ortloff, 1993). At a finer grain, Moore (1991) uses variations in shellfish recovered from middens, geomorphological evidence, and radiocarbon dates to suggest that a major El Niño episode occurred in the first half of the 14th century A.D. One response to the changed microenvironments was the short-term establishment of a farming community to buffer the effects of the heavy rains on major irrigation agricultural systems.

Also using data from glaciers and moraines, Seltzer and Hastorf (1990) argue for two periods of depressed temperatures in the central Peruvian highlands in the last two and a half millennia, the second occurring after A.D. 1290. They underscore the consequent deleterious effects on maize farming, as the available land that could have been used to produce the crop would have been cut in half. Rather than argue that the situation led to the chronic Late Intermediate warfare, the authors suggest that the climatic change exacerbated a situation already made volatile by social causes.

Two other points on environmental context and the archaeological record merit comment. In past articles, Richardson has noted that a rise in the sea level has likely inundated many coastal Preceramic sites. The preservation bias thus introduced into the archaeological record, however, is only beginning to affect our perception of the nature of early occupations

(see articles in Sandweiss, 1992a). In addition, Craig (1992) stresses that unusual, but recurrent, events may have conditioned the archaeological record in such a way as to bias our conception of the immediate environment at the time of sites' occupations. He proposes specifically that distributions of land snails that have been used in the past to argue for wider distributions of fog-zone vegetation (*lomas*) may be more appropriately understood as short-term responses to El Niño events or to localized colluviation.

Technology and Society

The analysis of productive technology has shifted in recent years from an emphasis on describing the physical characteristics of manufacture toward explaining the social context of production, circulation, and use of the products. The lead in that approach to analysis has come largely from investigators studying metallurgy, although a deep interest in the social context of textile use has existed for decades in the Andes. The modern work is based on the notion that technological creativity is culturally embedded. The development of technology is seen to be as much a matter of cultural choice as it is insight into the physical properties of materials.

In metallurgy, an important feature is that innovation occurred principally in the fabrication of symbolic and status-related objects (see, e.g., Sagárnaga, 1991), not in toolmaking. In writings over the last decade, Lechtman especially has emphasized the dual importance of (1) the symbolic meaning of color and cultural notions of the essence of metal alloys and (2) the technical features involved in metallurgical innovations. In recent publications, she has documented long histories of experimentation in alloying (e.g., Lechtman, 1988, 1991). Epstein (1993) also has emphasized the role of cultural choice in the metallurgical techniques employed by smiths of the north Peruvian coast. He underscores the point that both the finished products and the methods used to produce them were a matter of deliberate choice, since a variety of methods could have been used to produce visually similar objects. The cultural uses of metal products and the development and exchange of technology, along the Pacific coast from Peru to Mexico, are explored extensively in Hosler and co-workers' (1990) monograph on axe-monies and related artifacts. Among other conclusions, they find much to support the notion that base-2, -5, and -10 systems of stored value and standards of exchange may have over a millennium of history in Ecuador.

Collectively, these scholars' works suggest that the north coast was the prime location in the New World for metallurgical innovation for 2000 years. Fieldwork has uncovered a Sicán metallurgical complex at Batan

Grande containing smelting furnaces, ore, slag, and processing tools used in mass production of arsenic bronze (Shimada and Merkel, 1993). At least some coastal alloys mixed coastal and highland ores, showing exchange between neighboring societies (Lechtman, 1991), although the nature of that exchange remains to be determined. Those and other analyses suggest that Andean metallurgical industries were more complicated than previously thought. For example, artifactual lead has often been considered a by-product of silver production from ores such as galena. Analysis of artifacts from the upper Mantaro indicates that those two metals were extracted from different ores, however, implying that a distinct lead metallurgical tradition existed at least as early as the Late Intermediate period (Howe and Petersen, 1994).

Ceramic manufacture continues to be another area of intense interest in the study of the technology of production. A new volume (Shimada, 1994c) contains much of the recent thinking on ceramic technology in the north Andes and includes a number of important advances in empirical recording and concepts of production. For example, archaeologists have known for decades, from the nature of the products, that the north coast of Peru boasted mass production of pottery by the early first millennium A.D. Curiously, however, the first large-scale workshops of the Moche (Russell *et al.*, 1994a, b) and Chimú cultures (Tschauner *et al.*, 1994) are just now being reported. The two teams reach differing conclusions about the locus of control of production for the sites they studied. The Moche group suggests that the potters were independent, whereas the Chimú group argues that the state controlled production. For another area in which molds were used to make figurines (the Formative of the Jama-Coaque region of coastal Ecuador), Cummins (1994) makes the interesting argument that the molds should not simply be considered technological devices. Instead, he suggests that we weigh the possibility that the molds themselves had a distinct cultural import (e.g., the power to make other objects) and were not simply tools used to make another product. Rice (1994) observes that his argument parallels that of Lechtman and other metallurgists, for whom technology must be interpreted in both a physical and social sense.

What is largely new for the Andes, and promises to yield important advances in the study of production, sourcing, and exchange, is the application of archaeometric techniques to ceramic production. Using information and materials from unusually well-preserved manufacturing centers, archaeologists are now approaching ceramic studies from an increasingly scientific approach (e.g., Cleland and Shimada, 1992, 1994; Costin *et al.*, 1989; de Paepe and Buys, 1990; Shimada *et al.*, 1994; Wagner *et al.*, 1994). A series of papers also examines the more conventional topics of the de-

velopment of ceramic production as a craft technology (e.g., Cárdenas M., 1994) and as evidence for exchange of materials or ideas between societies (e.g., Bruhns, 1994). Raymond and co-workers' (1994) review of the evidence for the oft-posed link between very early Puerto Hormiga (Colombia) and Valdivia (Ecuador) finds little to recommend a single source of invention; instead, they suggest that the use of ceramics as pots was developed independently in both places. Carmichael (1994) finds that multiple technologies, which he suggests were regionally based, were used in making the renowned Nazca pottery of Peru's south coast. Several papers also explore the uses of ethnoarchaeology for interpreting production in prehistory. Pozzi-Escot *et al.* (1994), for example, find great similarity in the tools used by modern potters and the artifacts recovered from contexts in which the elegant Wari ceramics were produced. They suggest that the nature of the tools, the scale of production, and the character of the ceramics all imply supraregional organization of production. Arnold (1994), the dean of Andean ceramic analysts, presents a critical overview of current research from an ethnoarchaeological perspective. He emphasizes understanding production from ecological and technical perspectives first and subsequently from sociopolitical perspectives. In his discussion, he draws attention to a variety of issues that would have affected the practical decisions made by potters, especially concerning environmental features and choice of materials.

The best-documented contexts of production lie in the Inka case, for which the many written Colonial-era sources (e.g., Espinoza Soriano, 1970, 1987) have been combined profitably with archaeological and archaeometric studies. Cuzco-style pottery is the artifactual hallmark of Inka presence throughout the Andes, but its role in the state economy was narrower than its prevalence might suggest. The uses of state vessels probably centered on the ceremonial hospitality that lubricated political relationships. Pots were used to brew beer, to prepare food, and to serve and store both food and drink, as well as to contain offerings of food and to accompany burials as grave goods (Morris, 1991, 1995). More broadly, Inka pottery's use in political activities, especially at provincial centers, emphasized the importance of the state as symbolic and physical sponsor (Hyslop, 1993). In a polyglot empire such as Tawantinsuyu, visual displays were a key form of demonstrating state presence and affiliation (DeMarrais *et al.*, 1996; Hayashida, 1994; Morris 1991, 1995). The finer Inka ceramics usually stood out as the most elegant vessels in use, reinforcing the state's position of dominance through material culture. Their presence was often an unmistakable emblem of imperial dominion, although caches of vessels were sometimes used to assert claims of authority at the extremes of imperial advances where Inka rule had ambiguous practical effect (e.g., McEwan

and van der Guchte, 1992). Conversely, there is as yet little evidence that Inka pottery was used in the everyday affairs of the subject populace, except as part of feasting sponsored by the state (Costin and Earle, 1989).

Investigators studying the nature of production concur that the finer Inka pottery bears the marks of a labor-intensive, high-status ware (e.g., D'Altroy and Bishop, 1990; Hagstrum, 1989; Hyslop, 1993; Morris, 1991). Despite, or perhaps because of, the varied sources of information and the distinct relations the Inkas maintained with their subjects, important questions about labor organization and access to raw and finished resources are still unresolved. Numerous documentary sources report that the Inkas set up self-sufficient production enclaves to make fine textiles, ceramics, and other goods. Despite efforts to standardize the pottery, provincially distinctive Cuzco-style polychrome ceramics, provincial imitations, and hybrids have been described for the entire Inka domain. Moreover, the ceramic assemblages of many state installations, especially in the south Andes, consisted of local styles. Some researchers have described a fairly centralized model of state management of production and access to Cuzco-style polychrome in some regions, coupled with some farming out of production of nonstate wares (D'Altroy *et al.*, 1994). Others are more doubtful that we can currently pin down the precise nature of state control over raw materials, labor organization, and access to products, given the apparent diversity of strategies pursued in the empire. Hayashida (1994), for example, observes that we still need a better understanding of the reasons for using polychrome ceramics in some contexts and not others, and that the material correlates of ethnic identity and relations with the state need to be explored more fully.

The efforts dedicated to technical advances in textile production have not been so extensive as those dedicated to ceramics. Much of the analysis of textiles has been dedicated to examining its iconographic content for mythical or religious themes (e.g., Paul, 1992; Stone-Miller, 1992a; Wallace, 1991), or, less often, the representation of power relations in state society (e.g., Stone-Miller and McEwan, 1992). However, several works have increased our knowledge of innovation in weaving, the technical features involved in making cloth, and the physical and chemical character of ancient textiles (e.g., Clark, 1993; Doyon-Bernard, 1990; Jakes, 1991; Phipps, 1989). One final area of technological study that is slowly building a foundation is sourcing analysis of obsidian. Burger *et al.* (1989, 1994) and Asaro *et al.* (1994) have been leading the way in developing this field in Ecuador, as they did for obsidian sourcing in Peru. Their work has begun the arduous task of advancing our understanding of the procurement and exchange systems of that valued material.

Gender Studies

The study of gender is only now starting to make inroads in the Andes, even though some proponents of rethinking gender relations have published in Andean studies for several years. Not surprisingly, iconographic studies are an important area for exploring the issue. Moche figured drawings and modeled ceramics make them especially amenable to examining activities in which males and females are portrayed (e.g., Arsenault, 1990; see citations above on Moche). With rare exception, however, the iconographic studies do not have the intent of reconsidering women's place in prehistory to nearly the same degree found elsewhere in the Americas.

A series of other papers does, however, address women's power and behaviors in society more overtly. Gero (1991a), for example, argues that the notion that only men made stone tools is less persuasive than a view that both men and women made lithics, but for distinct purposes. She draws from analysis of changing contexts of production and tool forms at sites in Peru's Callejón de Huaylas to propose ways in which lithic manufacture differed between ceremonial (male-related) and domestic (female-related) contexts over time. Hastorf and Johannessen (e.g., Hastorf, 1990a; Hastorf and Johannessen, 1991, 1993; Johannessen and Hastorf, 1989) use paleobotanical and bone collagen data to explore status, behavioral, and dietary differences between men and women among the Xauxa of the upper Mantaro Valley. They show that, following the Inka conquest, the roles of the sexes resulted in dietary shifts. The males consumed more maize, probably in the form of beer provided by the state in return for labor or in the context of ceremonial hospitality. Similarly, using data on cloth manufacture from Xauxa household deposits, Costin (1993) shows that spinning doubled from the pre-Inka to the Inka era, while productive differences between elite and commoner households largely disappeared. Cloth-making, one of the centerpieces of the Inka craft economy, fell most heavily on the shoulders of women in the household, but the distribution of the textiles was most likely the province of elite men (pre-Inka) or the state (Inka). These few studies suggest that the exploration of how gender relations pervaded economics and politics should be a growing and fruitful line of inquiry in the future.

CONCLUDING COMMENTS

In concluding this review, I summarize the areas in which our knowledge has been advanced most significantly and how analytical and interpretive perspectives have changed, and then close with some potential

directions for future research. The preceding discussion should make clear that the hundreds of researchers working in the Andes have made enormous progress, despite the violent civil unrest and pervasive financial limitations. In particular, the emphasis on combined site-based and regional archaeology has added greatly to the database of Andean prehistory. For many decades, Andean archaeology was dedicated to site studies and to descriptions of culture histories based on stylistic seriations. Analysis of objects out of context is thankfully becoming increasingly rare, and the hard work of site survey is gradually expanding our baseline knowledge of prehistoric occupations. A few years ago, it was impossible to compare developmental sequences on the basis of regional settlement patterns for most of the Andes. That situation has changed for crucial areas around Lake Titicaca, important Peruvian and Ecuadorian coastal valleys, and large highland intermontane valleys and sections of puna. Andeanists still have some distance to go to catch up to the settlement pattern understanding gained in parts of Mesoamerica, North America, Europe, and Mesopotamia, but the commitment to regional archaeology is now making informed comparisons of regional developments possible.

Our understanding of the emergence of social inequality and early state society also has been advanced greatly. Studies of the crucial transition from the Late Preceramic to the Early Horizon have begun to describe a variety of incipiently hierarchical societies that were responsible for the construction of South America's first major monuments. Significantly, the work has shown that the societies of the Peruvian coast and highlands, despite some shared underlying principles (that resulted, for example, in the construction of similarly oriented U-shaped ceremonial complexes), probably varied greatly in their organizations. Plausible arguments have been presented for the coeval presence of relatively simple societies, integrated through collaborative ceremonial rounds, and hierarchical societies dominated by priestly and warlike elites. Explanations for the nature of interactions among distinct polities and the character of internal organization remain largely general or conjectural, however. A disproportionate amount of research has been committed to ceremonial architecture, to the detriment of understanding the more quotidian character of the societies of the era. From my perspective, in order to explain the emergence of social complexity, we need to understand both (1) what the elites were doing and the much broader context within which the elites operated and (2) those aspects of society that became complex and those that remained stable. It is precisely for those reasons that valleywide settlement surveys and household archaeology promise to advance our knowledge of long-term developments.

The upsurge of work on the Moche and related cultures has been equivalently important for explaining the emergence of state society. Investigators differ as to when the Moche polities had developed the decision-making hierarchies, social classes, or specialized economies usually taken to be the hallmarks of state society—either early in Moche's heyday (ca. A.D. 100–300) or at the end of the era (ca. A.D. 600). However, the combined work on urbanism, mortuary patterns, iconography, and craft production has finally begun to provide the detailed information needed to evaluate how different forms of power were linked as state society emerged. The evidence now suggests that military, ideological, economic, and social power were intimately tied together within limited kin groups. That is, neither bureaucratic institutions nor segregated political or religious leadership played important roles in Moche society.

Similarly, researchers have made important gains in describing the nature of expansionist states and empires. Monolithic models of Wari, Tiwanaku, Chimú, and Inka polities have long gone by the wayside, to be replaced by more nuanced conceptions. Not surprisingly, as more detailed information on the nature of core societies and immediate and distant hinterlands has been produced, explanations have shifted in crucial ways. For example, there is now an active debate over the degree of cultural homogeneity and concentration of power in elite hands in the Wari and Tiwanaku polities, based on a much larger corpus of field data than existed just a few years ago. Similarly, Inka-era archaeological studies are effectively distinguishing the importance of local cultural formations from state policies in assessing life in the Late Horizon. That effort has been aided considerably by more astute use of documentary and archaeological data sets. No longer do researchers rely solely on written sources to understand life in the empire, but explanations now draw from a broader range of information sources. We have not yet arrived at a happy state in which students of all disciplines collaborate productively, but the combined documentary–archaeological approach championed by the Huánuco Project 30 years ago is being progressively put into action.

From the viewpoint of theory, an important change is the increased convergence of explanatory perspectives taken by scholars from the Andean republics and from elsewhere. National archaeologists have become more problem-oriented in their approaches, while foreign investigators have made greater efforts to consider the particularities of Andean history and culture in their studies. Evolutionary and Marxist archaeology are well entrenched, and postprocessual approaches to a lesser degree. A particularly Andean social historical approach, much akin to the *Annales* school, also is highly influential. Even so, explicit concerns with theory do not have nearly the same importance as elsewhere in the world; for me, that is re-

grettable. Theory in Andean archaeology has focused most explicitly on middle-range issues, such as household archaeology, the social contexts of technology, the social relations of production, the interplay between ideology and politics in leadership, relations between the environment and the social aspects of adaptation, and the dynamics of relations between core and provincial elites in early expansionist states. None of those fields has produced a major conceptual shift in approaches to studying prehistoric society comparable to processual or postprocessual archaeologies, but the contributions are nonetheless significant.

It also should be apparent that, as is the case anywhere that research is conducted by scholars from several nations, intellectual and cultural histories continue to play an important role in forming questions of interest. National archaeologists often point out that the goals of their foreign colleagues typically end with the resolution of scientific concerns, whereas archaeology resounds powerfully within the modern cultures of the Andes. It is no accident that the ethnohistorian María Rostworowski is the best-selling author in Peru. Part of the problem may lie in a cultural gulf that may never be bridged. For foreign archaeologists, politics are usually treated as a distinct domain of research, whereas politics more overtly pervade academics and living culture for national archaeologists. The contexts and goals of archaeology may therefore remain divergent indefinitely.

From a methodological perspective, interdisciplinary collaborative research has been paying important dividends. Researchers are increasingly applying more techniques from the hard sciences to explain the Andean past. The results thus far are very encouraging, but the scope of such studies is again limited in comparison to that of Mesoamerica and North America. If I had to choose the areas in which I think Andean archaeology too often lags behind other regions of comparable importance archaeologically, I would focus attention on research strategy and analytical techniques. Quantitative methods are too infrequently employed, and explicit sampling designs are fewer than desirable, although a number of projects have made very encouraging advances in using those approaches and other methods, such as GIS (Geographic Information Systems).

That point leads me to make some suggestions as to areas that could benefit from increased attention. First, as was noted above, our research is still disproportionately concerned with the fancy and the monumental. Understanding the crucial emergence of social inequality, economic specialization, or state formation requires a lot of drudge work in the more inelegant parts of the archaeological record. To date, there are few, if any, regions of the Andes in which a project has effectively analyzed a full cross-section of society over time. The efforts made in household archaeology are beginning to redress the imbalance, but much more remains to be done.

Second, few projects have started to address some of the kinds of research outlined in recent challenges to the discipline: e.g., gender, faction, class, and heterarchy (e.g., Brumfiel, 1992; Ehrenreich *et al.*, 1995). As observed in this discussion, class conflict has been a major element of marxist theory, but the actuality of its study has not progressed very far. There is one related area in which Andean archaeology may be able to take a leading role, however—social organization, ideology, and the management of space. Most forays into that topic (concentrated on the Inkas) remain more tantalizing than persuasive, but the subject is central to interests in the Andes and may provide great insights into the nature of prehistoric society in the near future. Finally, another area that could benefit from increased research lies in the relationship between the biological and social character of prehistoric human societies. Some very productive work has been done on diet, epidemiology, social status, and gender, but there remains an enormous amount that could be done, for example, through study of social relations using DNA analyses.

In closing, I would like to emphasize the very positive view that I gained from reading the literature for this paper. The idea that understanding the past must come from integrated application of theory, method, and hard information is becoming increasingly influential, which is why the next few years should continue to see important progress in explaining how the Andes became one of the world's cradles of civilization.

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