CERRO BAÚL: A WARI CENTER ON THE TIWANAKU FRONTIER

Patrick Ryan Williams

Andean scholars have long debated the nature of the relationship between two Middle Horizon (ca. A. D. 750–1000) Andean states; many assumed Tiwanaku dominated Wari and preceded Wari in time. Recent research at the Wari administrative center of Cerro Baúl in the only known region occupied by both states (the Moquegua Valley of southern Peru) indicates that Tiwanaku may not predate Wari in Moquegua and that, contrary to previous assertions, both states occupied the valley for the last three centuries of the Middle Horizon. In support of this position, I review recent excavations at Cerro Baúl. Then I present eight new ^{14}C dates and summarize the evidence for two major construction episodes at Cerro Baúl. I interpret the local Wari construction chronology based on the 12 ^{14}C dates now available from excavation contexts and I suggest that the new data, in comparison with 24 published ^{14}C dates from other Wari centers, support a later date for Middle Horizon 1B Wari expansion than previously postulated.

Los arqueólogos andinistas han venido discutiendo desde hace mucho tiempo la naturaleza de las relaciones entre los dos estados andinos principales del Horizonte Medio (750–1000 d. C.) asumiendo mayoritariamente que Tiwanaku dominó a Wari y que lo precedió en el tiempo. Investigaciones recientes en el centro administrativo Wari de Cerro Baúl, en el valle de Moquegua en el sur del Perú, la única región conocida por haber sido ocupada por los dos estados, indican que Tiwanaku no precedió a Wari en Moquegua y, contrariamente a aserciones previas, que los dos habían ocupado el valle durante los últimos tres siglos del Horizonte Medio. En apoyo de esta posición, evalúo excavaciones recientes en Cerro Baúl que incluyen exploraciones en los sectores públicos y residenciales. Las investigaciones revelan evidencias de fuertes conexiones con la capital Wari, y evidencias en contextos ceremoniales de interacción entre Wari y Tiwanaku. Presento a continuación ocho nuevas fechas ^{14}C y resumo la evidencia de dos episodios principales de construcción en Cerro Baúl. Interpreto la cronología constructiva Wari local en base a 12 fechas ^{14}C disponibles de contextos excavados en el sitio y sugiero que los nuevos datos, en comparación con 24 fechas ^{14}C publicadas de otros centros Wari, apoyan fechas más tardías par la expansión durante la Epoca 1B, con una duración de influencia imperial Wari hasta fines del primer milenio d. C.

The relationship between the Middle Horizon polities of Wari and Tiwanaku has long perplexed Andean scholars. They shared major motifs and perhaps shared similar beliefs. Yet, they occupied distinct geographic areas, with Wari expanding throughout the central sierra from its capital in Ayacucho, and Tiwanaku centered in the Titicaca Basin colonizing valleys east and west of the altiplano. Traditional chronologies have placed Wari after Tiwanaku state development, with a later imperial expansion yet earlier collapse than the Tiwanaku state. The late expansion of Wari has led to speculation that Wari iconography was derived directly from Tiwanaku (Ponce Sangines 1980; Posnansky 1945). Recent research is revising this speculation, however, and more recent explanations suggest coeval development of Middle Horizon ideology, a shared iconographic and belief system that characterize both Wari and Tiwanaku (Cook 1994; Isbell and Cook 1987; Schreiber 1992).

A unique perspective on the nature of the Wari-Tiwanaku relationship can be gained from Cerro Baúl, the only Wari administrative site known to date that overlaps spatially and temporally with Tiwanaku settlement systems. Although Tiwanaku ceramics have been recovered from other Wari provincial areas, as they have in Cusco, archaeologists have not yet demonstrated overlapping settlements as they have in Moquegua. In this paper, I present the results of my excavations at Cerro Baúl, and I evaluate the excavation data and site chronology in relation to Tiwanaku settlement in the valley as well as to Wari imperialism.[1]

Relations Between Wari and Tiwanaku

Wari was first defined as the source of a major culture by Tello in the 1930s (Tello 1942). Before that

Patrick R. Williams ■ Department of Archaeology, Boston University, 675 Commonwealth Avenue #347, Boston, MA 02215

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time, most archaeologists believed that there were differences between the ceramics called "coastal Tiahuanacoid" and classic Tiahuanaco. However, most scholars believed the Peruvian materials were somehow derived from the altiplano Tiwanaku tradition (Schreiber 1992:75; Uhle 1903). Later research described a style emanating from the Wari capital that extended all over Peru, evidently the result of rapid expansion. Menzel's (1964) ceramic chronology linked Wari expansion to the spread of Middle Horizon Epoch 1A and especially 1B ceramic styles into the Ica Valley of southern Peru. This period of expansion is usually dated to A.D. 600 to 700. The following Wari ceramic Phase, Epoch 2, has more secular motifs that Menzel (1964:69–70) attributes to a crisis and reorganization in Wari culture and dates to A.D. 700 to 800. Epochs 3 and 4 represent the collapse and aftermath of Wari and the development of regional ceramic styles based on previous Wari styles and are traditionally dated to A.D. 800–1000.

Tiwanaku ceramic chronology, while not as well defined as that of Wari, is postulated to represent an organized polity that emerged in the late fourth century A.D. and endured into the eleventh century A.D. and perhaps slightly later (Ponce Sangines 1972). The Tiwanaku chronology has been divided into five phases. The last two of these, Tiwanaku IV and Tiwanaku V, are found locally in the Moquegua Valley and are known as the Omo and Chen Chen Phases respectively (Goldstein 1989). The Moquegua sequence begins later (A.D. 500–725 for the Omo Phase) and ends earlier (A.D. 725–950 for Chen Chen) than its altiplano source (Goldstein 1993), but there are still very few absolute dates for these phases. New evidence is likely to shift the absolute dating of these phases substantially, perhaps even nullifying the existence of a Tiwanaku IV Omo Phase.

Given these established chronological sequences, it is tempting to see Wari as short-lived, with a rise and fall all within the time span of Tiwanaku hegemony. The similarity between Wari and Tiwanaku iconography is also very strong, with both traditions depicting the Front Faced Deity or the Staff God as the paramount being or sacred figure. In terms of both style and form, Wari and Tiwanaku ceramics are distinct assemblages and are segregated spatially on a regional level (Lumbreras 1974; Schreiber 1992). Thus, it is still tempting to see Tiwanaku as the source of much of the Wari iconography, perhaps cross-fertilized with influences from the central sierra and Nasca, and then spread by Wari warriors moving across the Andes (Menzel 1964).

Despite the many shared designs in iconography, each polity had its own style of monumental architecture. Tiwanaku emphasized sunken courts and massive mounds with masonry adornment, megalithic gateways, and imposing stelae (Posnansky 1945). Rarely ornamented with carved stone, Wari building focused upon grand compounds of stone masonry with high walls and multistory interior galleries, courts, corridors, and rooms (Isbell et. al 1991). Although provincial centers served different functions, their monumental architecture provided visible statements of the political power of their respective capitals and reflected the canons of architecture in the principal city. Furthermore, changes in architectural styles in the capital are evident throughout each of the imperial realms. Wari architecture included the patio-group style (Schreiber 1978; Spickard 1983) and D-shaped temples in the heartland and at Honco Pampa and Cerro Baúl (Cook 2000). The Tiwanaku temple mounds found throughout the altiplano and the province of Moquegua are constructed in the style of the principal pyramids of the city of Tiwanaku itself (Bermann 1993; Goldstein 1993).

Wari corporate architectural styles are reflected in imperial administrative centers in the provinces, especially in areas where direct control was established. The level of political complexity of the conquered region was often instrumental in determining whether an administrative center in the imperial style was established. Areas characterized by little local political complexity called for more direct forms of control, while administrative structures in more politically complex societies met the need for administrative centers with existing social institutions and facilities. However, other factors besides the level of local political complexity may have been important in the establishment of administrative centers. Border zones, transportation hubs, and resource-rich locales also received special attention (Schreiber 1992:30). Frontier provinces, especially, often receive a disproportionate amount of attention and direct control in order to define imperial boundaries and promote political integration (Doyle 1986).

Empires are dynamic entities, and the functional roles of imperial administration can change through time. Imperial reorganization and recentralization

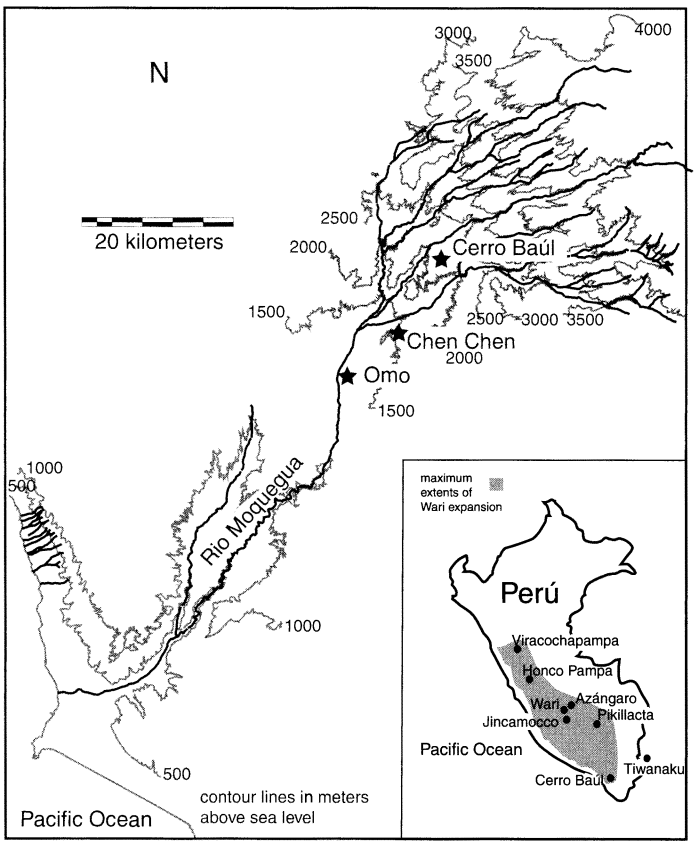

Figure 1. Map of the Moquegua Valley and the locations of Cerro Baúl and the major Tiwanaku settlements.

may lead to the reform of the administrative system, and thus to changes in the material correlates of political control (Doyle 1986). Alterations in the manner of political control may be reflected in the archaeological record through changes to imperial administrative sites (Schreiber 1992). In the case of Wari, these adjustments may be reflected in the emergence and perpetuation of the patio-group architectural style (Schreiber 1978; Spickard 1983), but the absolute dating in both the capital and the provinces for this phenomenon remains uncertain.

The introduction and continuation of corporate architectural styles throughout the geographical realm of a polity is not unique to the Middle Horizon in the Andes. Chimu rural administrative centers contained the same architectural components as the capital at Chan Chan, and the U-shaped *audiencia* appears in predictable locations as a symbol of state power (Keatinge 1982). The precedent for the *audiencia* and storeroom architecture of Chimu administration is found in the Moche V components of sites like Pampa Grande (Day 1982) and Pacatnamu (Keatinge 1975).

Inka provincial architecture also is marked by internal consistency, and some architectural elements show they followed the canons of the capital. The *kancha* and the *kallanca* are found throughout the Inka imperial realm, and it is quite probable that the former developed out of Wari influences and local developments in the Cuzco region (Hyslop 1990; Topic 1986). In reference to provincial Wari, it is imperative that both architectural form and construction style be traced back to its development in the heartland as a corporate style (Moseley 1979). Some of the most significant findings that bear on these issues come from the only shared frontier between the two Middle Horizon polities of Wari and Tiwanaku—for example, the Moquegua Valley (Figure 1).

The Tiwanaku occupation of Moquegua has been the subject of intensive study, most notably by Paul Goldstein (1989, 1993). Tiwanaku settlement

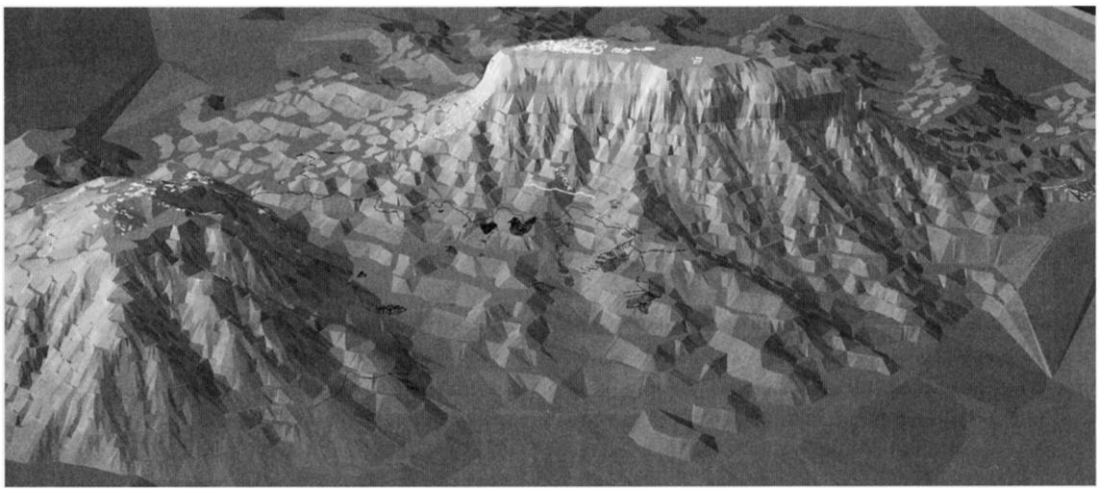

Figure 2. 3D GIS model of the architectural (white) and agricultural (black) remains associated with the Wari colony at Cerro Mejia (left) and Cerro Baúl (center).

focused in the middle valley (1000–1500 masl) where a three-tier settlement hierarchy complete with relict field systems has been identified (Goldstein 1989; Williams 1997). The Tiwanaku occupation did breach the high sierra, as Bruce Owen (1998) has recently reported, but its largest settlements, monumental works, and agrarian fields were all concentrated in the middle valley. Until recently, we believed that Tiwanaku colonists arrived in the Moquegua Valley first, perhaps around A.D. 500. A brief hiatus between phases IV and V has been posited by Goldstein (1989), but the Tiwanaku occupation of the valley was fairly continuous until the tenth century A.D. Most archaeologists believed that Wari arrived a century later and occupied the high sierra for no more than a century (Moseley et al. 1991). Recent radiocarbon dates from Cerro Baúl do not support this proposition, but rather indicate that the Wari occupation was nearly as long as the Tiwanaku presence in the valley.

Excavations on Cerro Baúl

Excavation of the Wari occupations on the summit of Cerro Baúl, the administrative and ceremonial center of the Wari colony in the Moquegua Valley, has provided insight into 1) the duration of Wari occupation of the region, 2) the relationship between the provincial center and the Wari capital, and 3) the nature of interaction with Tiwanaku colonies in the region. This Wari colony is located on a high sierra intervalley ridge between the Rio Moquegua tributaries of Torata and Tumilaca (Figure 2). The Wari sites were linked by the longest canal ever built in the Moquegua sierra, and the settlement system is crowned by the Wari administrative center on the high mesa (2590 masl) of Cerro Baúl. The flanks of Cerro Baúl and the adjacent mountain, Cerro Mejía, were covered by agricultural fields, remnants of which exist today. The fields around Cerro Baúl probably did not support agrarian production for export outside the colony, but may have produced enough to support the extant Wari population (Williams and Sims 1998).

The remains on the summit of Cerro Baúl can be divided into two distinct types of architecture: masonry public architecture on the very summit of the mesa and smaller households with stone foundations on the eastern slopes. The masonry buildings are large, similar to the buildings in administrative centers to the north and to buildings at the capital of Wari itself. The latter are elaborate versions of the domestic terraces that grace the slopes of the mountain and the adjacent Cerros Mejia and Petroglifo. The architectural differences between these two areas are important; construction of the public buildings likely required a mandate of the state, or at least local leadership. Due to the greater variety of resources and the bureaucracy involved, reorganization of large public works should take place less frequently than minor changes in domestic architecture. The residential architecture is organic, and continual remodeling can be organized at the household level. Domestic architectural revisions involve fewer resources, and can be undertaken more frequently.

The summit of Cerro Baúl is the center of public

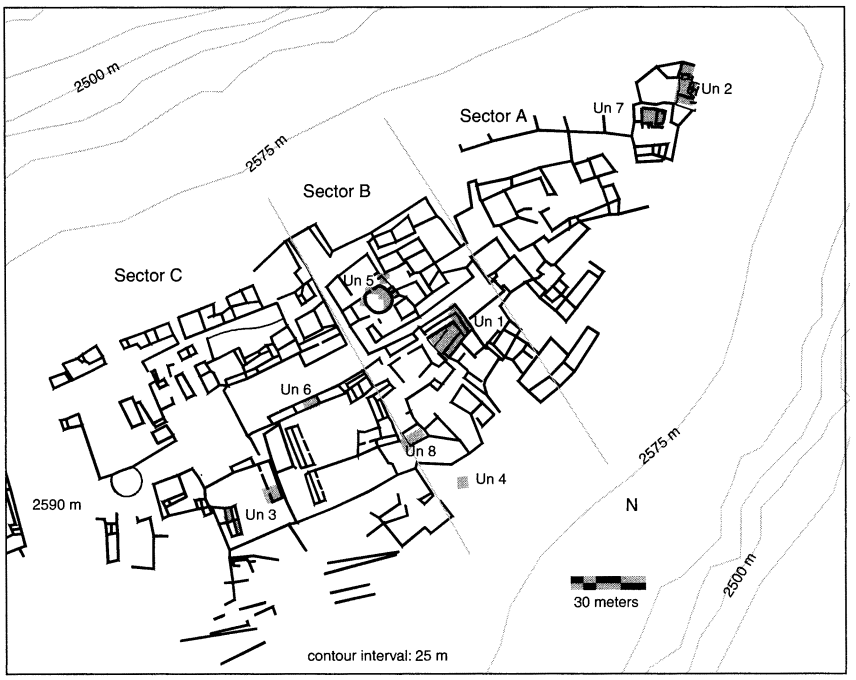

Figure 3. Map of the summit architecture at Cerro Baúl, documenting the 5 summit sectors and the location of all excavation units from 1989–1998.

buildings of this administrative center of the Wari settlement. This administrative site contains patio-group architecture in the Wari style, a D-shaped structure, and craft production/habitation areas. The Cerro Baúl Excavation Project over the past three years has identified three distinct sectors in the architectural core on the summit (Figure 3). The eastern sector (A) is referred to as Umiñaniyoq, the artisan residence area, because artifacts associated with lapidary work were recovered from excavations here. The central sector (B) of the architectural core is referred to as Willka kancha, the ceremonial sector, given the nature of the constructions in units 1 and 5. The western sector (C) of the architectural core, named Hatun Kancha, is composed of large rectilinear plazas flanked by galleries. Two uninvestigated sectors lie to the west. Sector D is an architectural compound surrounding a large boulder at the highest point on the mountain, and sector E is a raised platform toward the western end of the hill separated from the main architectural component of the site by more than three hundred meters.

Public Architecture

Excavations in the public architecture at the site include three units in the ceremonial sector B (1, 5, and 8) and two units in sector C (3 and 6). Unit 1 is a 12 m by 8 m trapezoidal plaza surrounded by halls on three sides in sector B (Figure 4). Robert Feldman's 1989 excavations in structures 1 and 2 were the basis for his assertion that this locale was the site of ritualized reciprocity between elites in the form of large-scale consumption of an intoxicating beverage (Feldman 1998).

In our excavations of structure 4 in 1997, the accouterments of this ceremonial drinking event—fine ware serving and storage vessels in the forms of *keros*, cups, and urns—were found broken in an ash layer upon the floor. This deposition layer represents a single episode that I interpret as a ritual offering that ceremonially interred this hall at the end of the Wari occupation of the *cerro*. The excavations in unit 1 provide evidence for activities of high-level ritual importance, as well as documenting the longevity of Wari occupation on the summit; evidence indicates that the structure was significantly remodeled during the Wari occupation of the summit, and the 4 radiocarbon dates processed from this unit reflect a distribution from cal A.D. 530–1220 (see Table 1).

Located 20 m to the northeast of unit 1, unit 5 is also located within sector B. This architectural feature is one of two D-shaped structures at the site. The principal room is a 10 m diameter circular hall with

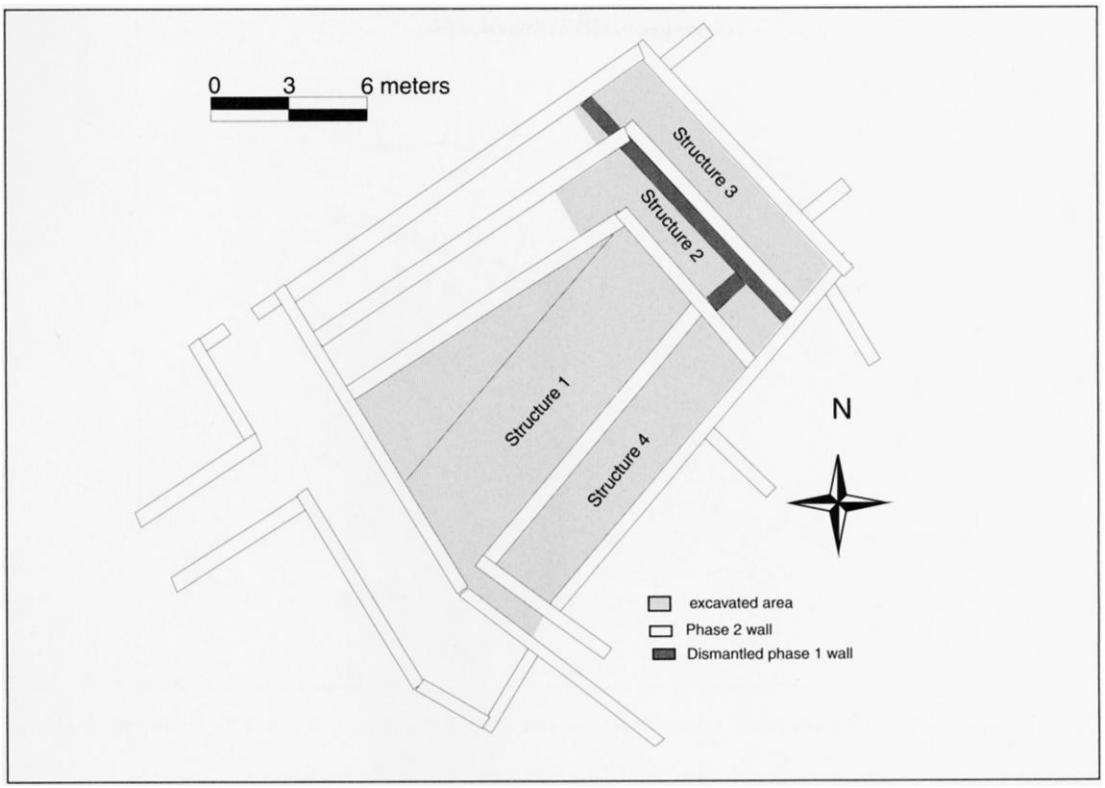

Figure 4. Plan of the standing walls in excavation unit 1, including the foundations of disassembled phase 1 walls.

an entrance in the center of its straight northwestern wall. Its form parallels similar structures in the Monjachayoq, Vegachayoq Moqo, and Cheqo Wasi sectors of Wari, as well as D-shaped structures at Conchopata and Honco Pampa. All these D-shaped halls have approximately 10 m diameters, except for Vegachayoq Moqo (20 m) and Cheqo Wasi (5 m) (Cook 2000).

Excavations in unit 5 focused on the northeastern half of the interior of the D-shaped structure, the front exterior face of this Hall, and the agglutinated rooms to the northeast (Figure 5). Burning events were associated with the abandonment of area D2 and the exterior of structure GN, and the agglutinated rooms were intentionally filled with sand and whole ceramic vessel offerings upon the unit's abandonment. A radiocarbon date processed on a charcoal sample from Area D2, originally part of the last roof of that structure, dates to cal A.D. 770–1000, calibrated 2 sigma. A second carbon date from a wood post found on the floor of the interior of the D-shaped hall dates to A.D. 770–1020, calibrated 2 sigma (see Table 1). These dates, which are statistically equivalent, combine to provide a date range of A.D. 780–990, calibrated 2 sigma. Although these data do not preclude an earlier construction date for the D-shaped temple complex, they do indicate that its final use was contemporary with the last phase of occupation in unit 1 and based on radiocarbon age would be dated to Middle Horizon Epoch 3, although the architectural form is one that is classic Wari-Ayacucho style (Cook 2000).

Offerings of ritual artifacts were also associated with the construction of the complex. A metallic foil camelid, approximately 2 cm across, was recovered from fill beneath the floor in the center of the D-shaped hall. A cache of gourd bowls, one of them engraved with designs featuring a lizard and an anthropomorphic being with antennae and avian head hands, was excavated from a subfloor pit on the western exterior side of the circular wall. Furthermore, the interior of the circular wall was coated with a plaster surface and painted various times in shades of red, white, and blue-gray. The dedicatory construction offerings and the treatment of the complex at its abandonment reflect the importance of this space to the ritual life of the community.

A third excavation area at the border between sec-

Table 1. ^{14}C Dates from Cerro Baúl.Monumental Sectors.

Lab ID	Date B.P.	Date cal A. D. 2σ	$\delta^{13}C$	Material	Context
Beta-36967[a]	1090 ± 70 B.P.[b]	770–1160	NA	charcoal	Unit 1-2 ash above floor
Beta-36968[a]	1400 ± 60 B.P.[c]	530–780	NA	charcoal	Unit 1-2 ash above floor
TX-9278	1150 ± 50 B.P.[b]	770–1000	–27.0 %	charcoal	Unit 3A burnt beam
TX-9279	1150 ± 50 B.P.[b]	770–1000	–23.2 %	charcoal	Unit 5D ash above floor
TX-9280	1070 ± 50 B.P.[c]	780–1030	–27.1 %	charcoal	Unit 1-4 ash above floor
TX-9281	900 ± 40 B.P.	1030–1220	–26.7 %	charcoal	Unit 1-4 ash above floor
GX-24706	1400 ± 45 B.P.[c]	540–710	–24.9 %	charcoal	Unit 3E hearth 1
GX-24707	1180 ± 50 B.P.[b]	710–990	–23.9 %	charcoal	Unit 3E hearth 2
GX-24709	1140 ± 55 B.P.[b]	770–1020	–27.8 %	wood	Unit 5 beam on floor
Residential Sector					
Beta-36969a	1370 ± 60 B.P.[c]	550–780	NA	charcoal	Unit 2 ash above floor
Beta-36970a	1270 ± 60 B.P.	650–900	NA	charcoal	Unit 2 fill beneath floor
GX-24708	1220 ± 60 B.P.	670–970	–26.0 %	charcoal	Unit 7B ash above floor

[a] All dates processed by Beta Analytic were originally published in Moseley et al. 1991 and are not δ^{13} corrected. This is the first publication for all other dates and all are $\delta^{13}C$ corrected.
[b] One of the 15 dates used in the calculation of the phase 2 Wari construction style.
[c] One of 10 dates used in the calculation of the phase 1 Wari expansion.

tors B and C was investigated as surface remains suggested the possibility of a ceramic workshop. Unit 8 did not provide conclusive evidence of ceramic craft production on Cerro Baúl, but it did indicate the most substantial information to date for the complex architectural remodeling of the site during of the Wari occupation (Figure 6). Walls 1 and 2 were visible on the surface, and Wall 3 formed a terrace facing south. Excavation revealed an occupation surface affiliated with these three walls. On this surface we encoun-

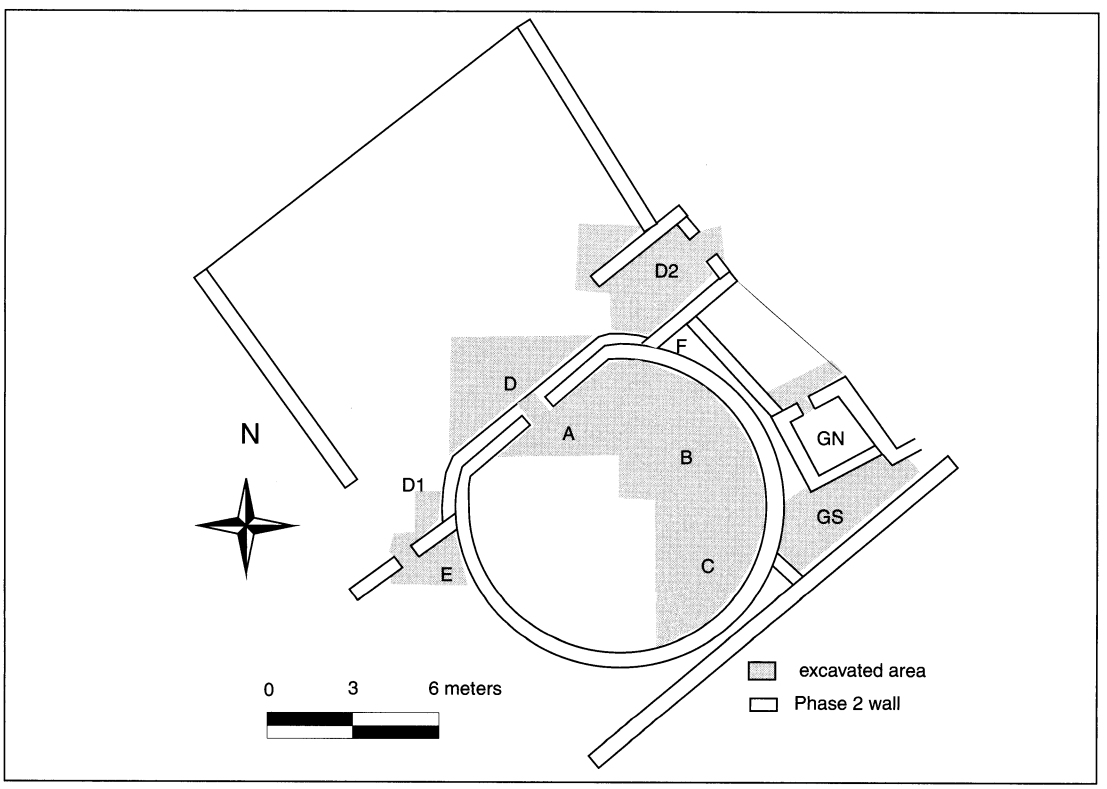

Figure 5. Plan of the standing walls in excavation unit 5.

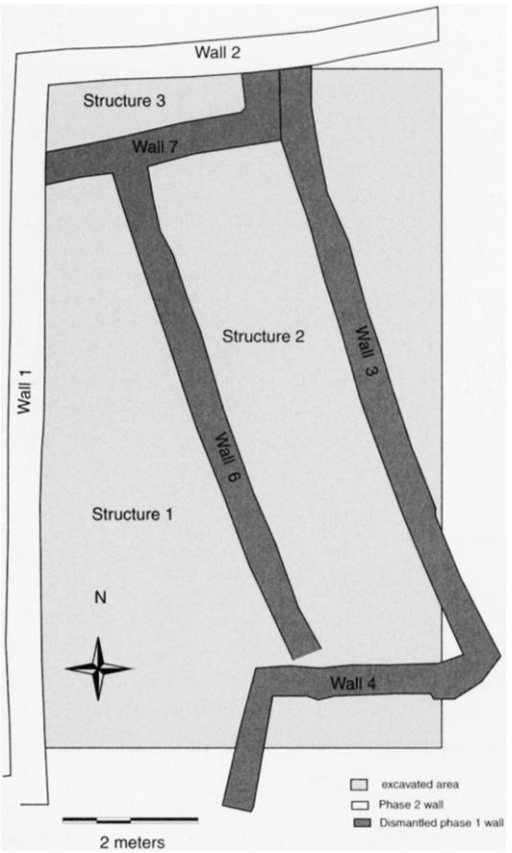

Figure 6. Plan of the standing walls in excavation unit 8, including the foundations of disassembled phase 1 walls.

tered a small hearth, a concentration of a reddish colored soil, and a large flat stone apparently used to grind pigments.

Beneath this floor, the top surface of several earlier walls appeared, indicating a prior architectural configuration completely distinct from the architecture visible on the surface. Although we lacked the resources to completely excavate this earlier architectural phase, it is clear that it was intentionally filled in order to provide a platform for the new occupation surface, and that parts of what were originally three distinct architectural spaces were covered to create one large platform, presumably open to the air.

Seventy-five meters west of unit 8, in sector C, is one of the large plazas and associated galleries that comprise this sector. Unit 3 (Figure 7) is an open air patio, 25 m on a side, with a complex of four 2.5 m by 6 m rooms in the southwest quadrant. A 12 m long hall with dual entrances is located in the northwest corner of the plaza. Excavations in the complex of four rooms in the southwest corner uncovered rooms with an elevated floor that was set upon poles protruding from the eastern and western walls at a height of 70 cm above the rustic earthen floor. The few cultural materials were recovered from this excavation included a small quantity of plainware ceramic sherds and gourd seeds. A radiocarbon date of A.D. 770–1000, calibrated 2 sigma was obtained from a piece of a burnt wooden pole that supported the elevated floor of this structure. The lack of associated cultural material makes functional interpretations of these structures difficult, but our preliminary hypothesis is that rooms A and C were storage structures whose raised floors kept products elevated above the earthen surface. Further excavations in structures B and C and similar architectural forms in sector C will need to be undertaken to evaluate this theory.

Across the plaza in structure E, the architecture is constructed of a more refined masonry style incorporating double walls, interior benches, and a finely finished stucco interior. There was no evidence of a raised floor, nor was any roofing material recovered in the excavation of structure E as was identified in upper levels of structures A and D. Few cultural materials were associated with the floors of structure E, although there were some late fire pits associated with the latest floors in the structure. Two radiocarbon samples extracted from these hearths dated to cal A.D. 540–710 and A.D. 710–990, calibrated 2 sigma. The earlier date is likely wood from a very early construction context that was burned in a secondary use context. The later date likely represents the period in which the fires were burnt and the surficial structure was constructed. It is statistically similar in date to the wood from a construction context in the four-room complex in the southwest corner of unit 3.

Structures of similar masonry construction style and similar dimensions to structure E are located 20 m to the northeast of unit 3 in unit 6 (Figure 8). Three rooms, 10 m by 3.3 m, sit side by side facing a plaza that measures 50 by 25 m. Excavations in the eastern half of the central room, structure B, revealed interior benches that ran the length of either wall 1 m above the well-made floor. Unlike unit 3 structure E, this room originally had two stories. A fallen lattice of 10–20 cm diameter poles was discovered within the structure's wall fall matrix. In one small area, a floor made by placing flat stone slabs covered with clay over the lattice was preserved, clearly defin-

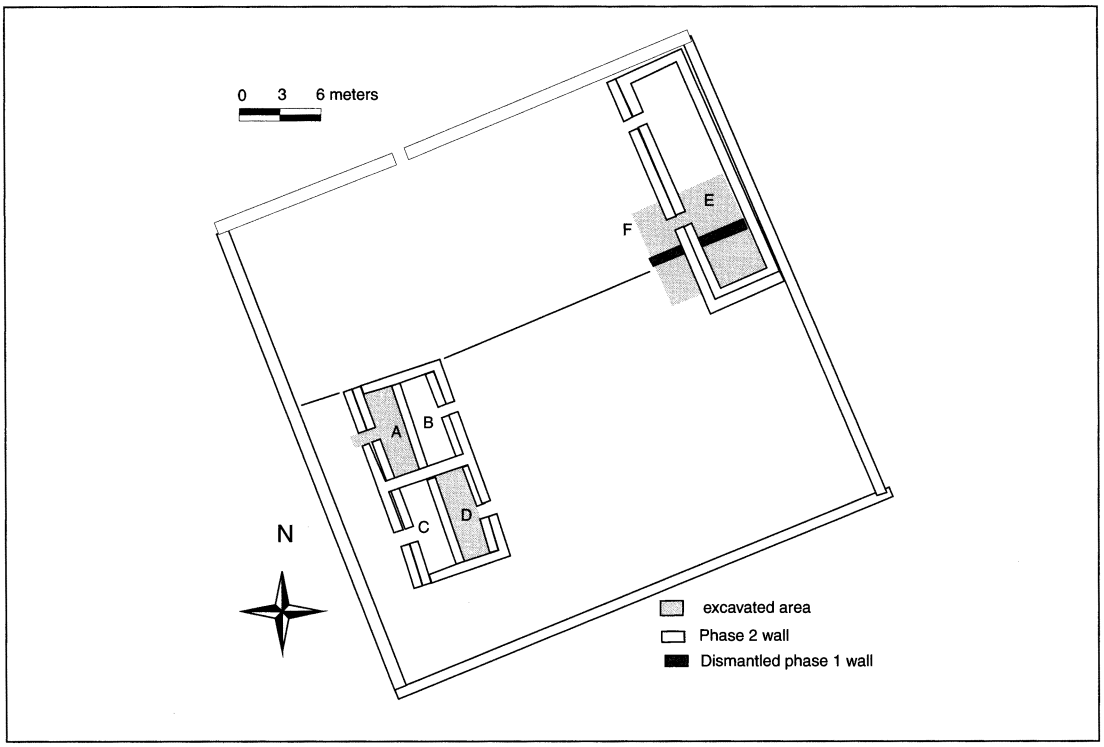

Figure 7. Plan of the standing walls in excavation unit 3.

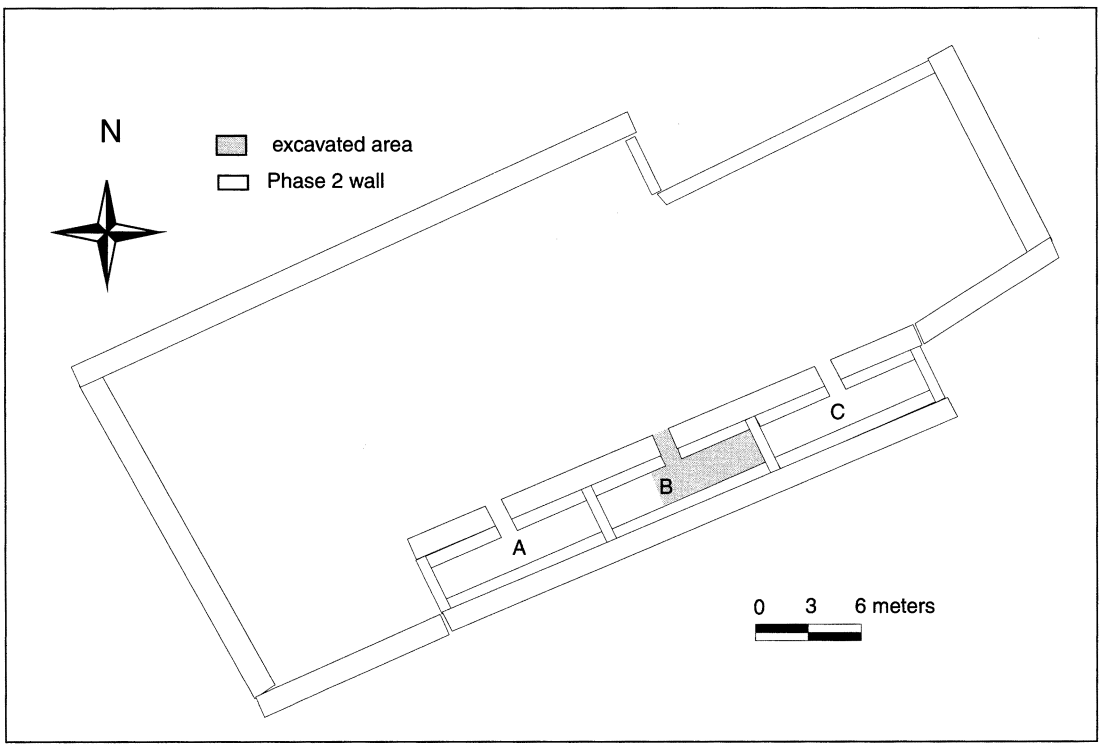

Figure 8. Plan of the standing walls in excavation unit 6.

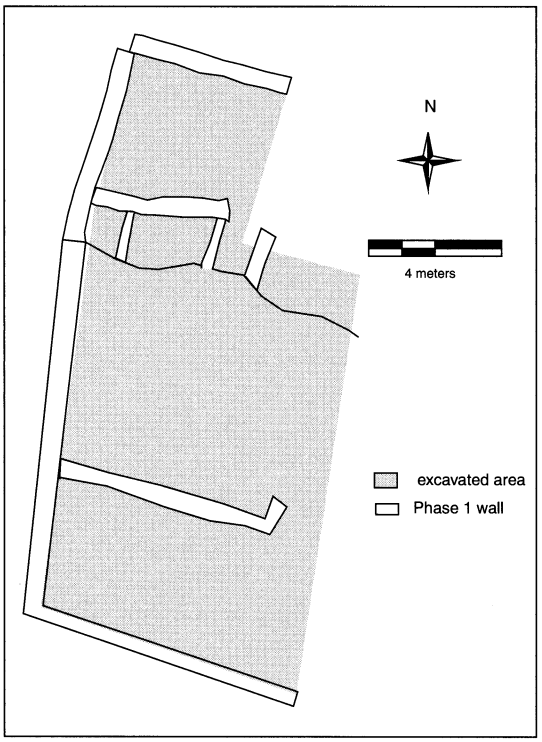

Figure 9. Plan of the standing walls in excavation unit 2.

ing the lattice work as a floor rather than a roof. The second story must have been greater than 1.5 m above the earthen floor, since the side walls are preserved to that point and there is no evidence that the poles were secured below that point. The position of the fallen poles also indicate that they must have been secured well above the 1 m bench. Based on the volume of wall fall excavated from the structure, its original height is estimated to have been between 4 and 5 m.

The excavations in the public architecture at the site exhibit a clearly ritual or ceremonial nature in some areas, while other areas were apparently cleaned out but not ritually interred. The differential treatment upon abandonment between units in the ceremonial sector (which were intentionally burned or filled with ceramic offerings) and in the sectors of the large plazas is significant and there is a substantial difference in the use of space and architectural forms. D-shaped halls and long galleries fronting 10–12 m long plazas is the norm in sector B. These spaces were not designed to accommodate large numbers of people, but they are clearly superior in quality and scale to the residential architecture at the site. The large, sometimes multistoried halls of sector C, however, opened onto plazas 5 to 10 times as large as the open air patios of sector B. What these areas shared was a common construction style and similar basic architectural elaboration. The residential architecture differs significantly from this pattern.

Residential Architecture

Two units were excavated in the residential sector A (2 and 7), and one additional unit (4) was located outside of the surface architectural remains to the south of the site in order to obtain context information on a cache of 93 obsidian points recovered from a looter's back-dirt pile in 1993. Unit 2 is an area originally excavated by Feldman in 1989 and amplified by our excavations in 1998 (Figure 9). It is comprised of 4 excavated rooms, designated A through D from north to south. The nature of constructions in this area were of a substantially different style and scale than in the public architecture at the site. Structure A was a 5 m by 5 m open plaza that was ultimately used as a trash dump, but was originally an outdoor activity space associated with structure B (2 m by 5 m), which is connected to A through a doorway on the south side of the plaza. The south wall of structure B serves as a retaining wall for structure C an 8 m x 6 m open air plaza that is elevated 1 m above and does not communicate with structures A and B below and to the north. Structure C does interface with the originally roofed structure D (7.5 m x 4 m) through a doorway on the southeast corner of the plaza.

Different living levels are common in sector A, with adjacent architectural spaces having large elevation differences. These altitude differences, however, do not imply separate households. Unlike unit 2, the 5 m by 5 m open air plaza (A) in unit 7 does not articulate with the 3 m x 5 m roofed room (B) with which it shares a wall to its east (Figure 10). Instead, structure B communicates with an unexcavated plaza below and to the east, while a small staircase leads up and to the north to a higher level from structure A.

Although manipulations of elevation vary, the basic architectural unit in sector A is distinctive: a small (5 to 8 m on a side) open air plaza that articulate with an smaller (2 to 4 m by 5 to 7 m) roofed room. The interior roofed room typically contains a raised platform 1 by 2 m covered with flat stone slabs that forms a table or grinding surface and large quantities of undecorated ceramic wares, botanical and

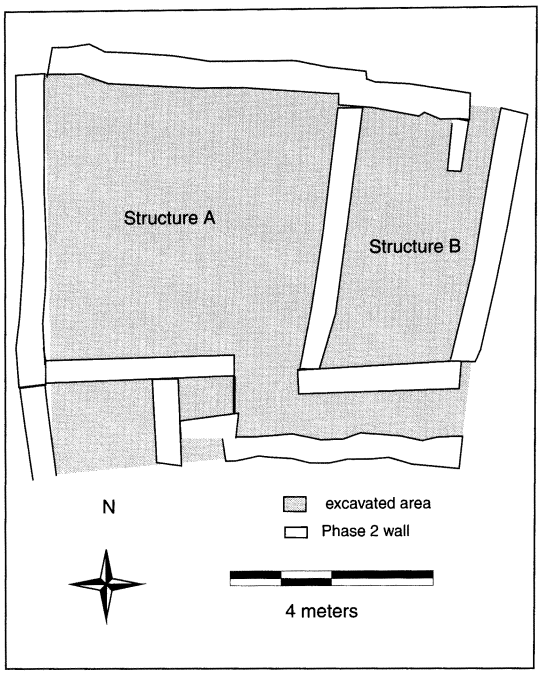

Figure 10. Plan of the standing walls in excavation unit 7, including the foundations of disassembled phase 1 walls.

animal remains, and the debris of residential activity. The plazas have similar materials, although not as densely distributed. Furthermore, evidence for stone working in lapis, onyx, and obsidian was discovered in these residences in the form of polishing stones, debitage, and a few finished stone beads and obsidian projectile points. Thus, the residential areas of sector A housed very different activities than are documented in the monumental architecture higher on the summit. The scale of plazas and associated rooms is appreciably smaller than in either sectors B or C, and the masonry construction style is more rustic than is noted on top. Public monumental and private residential architecture are clearly differentiated on Cerro Baúl based on construction style, scale, and the varied activities that they housed.

Evidence For Two Building Phases

In three of the excavation areas in the monumental constructions on the Cerro Baúl summit, evidence for an earlier construction phase in the form of deconstructed wall foundations has been recovered. In sector B, unit 1, structure 3, a well-preserved and very finely made floor was discovered in the 1989 excavations. This gallery was composed of an intentional fill of earth and rocks predating the ultimate use of the unit. In structure 2, a segment of the floor was constructed in this highest quality manner, while the majority of the room contained a stratigraphically higher, more rustic floor. Here we also noted that an earlier set of walls existed in this area in association with the well-made floor. Thus, the construction evidence indicates two phases, the second of which involved partial deconstruction of the first. Based on the available evidence, the first phase was apparently a U-shaped gallery surrounding a plaza. Interestingly, the areas in which the full widths of these rooms are preserved vary between 2.3 and 2.35 m. The second phase involved the constriction of the plaza size, the deconstruction of certain walls, the interment of the finely made floors, and the construction of a new set of galleries in a trapezoidal pattern, all with a width between 2.3 and 2.35 m.

Just 50 m southwest of unit 1, excavations in sector B, unit 8 revealed a set of wall foundations that formed a 1.75 m wide gallery oriented approximately 30 degrees off the Wari architecture that is preserved on the surface. The earliest phase of occupation in this unit is represented by walls 3, 6, and 7, which form the boundaries of structures 1, 2, and 3. During a major remodeling event, these three walls were partially dismantled to create a new activity space. Walls 1, 2, and 4 were constructed to enclose this new space, and the floors and wall foundations of the original rooms were interred with fill and covered by a new floor surface. Thus, the three original structures were concealed by a large platform or plaza enclosed on the north and east by walls 1 and 2 and open to the south and east, except for wall 4, overlooking the Tumilaca Valley 600 m below.

In addition to the evidence for a reconstruction event in two units in sector B, excavations in sector C, unit 3 also indicate an earlier construction phase that is not represented on the surface. Structure E, the 12 m long hall with dual entrances, sits upon the foundations of an earlier structure that was oriented east-west instead of north-south. Below the floor surface associated with the walls of structure E, the footings of an earlier stone masonry wall that had been disassembled were exposed by excavation. This wall was bisected by structure E and its foundations continue under structure E's western wall into the later phase patio. An early phase floor that abutted this wall to the south was revealed during excavation, and it is probable that the southern wall of structure E may have also served as the southern wall of this early phase structure. If so, the early phase room measured

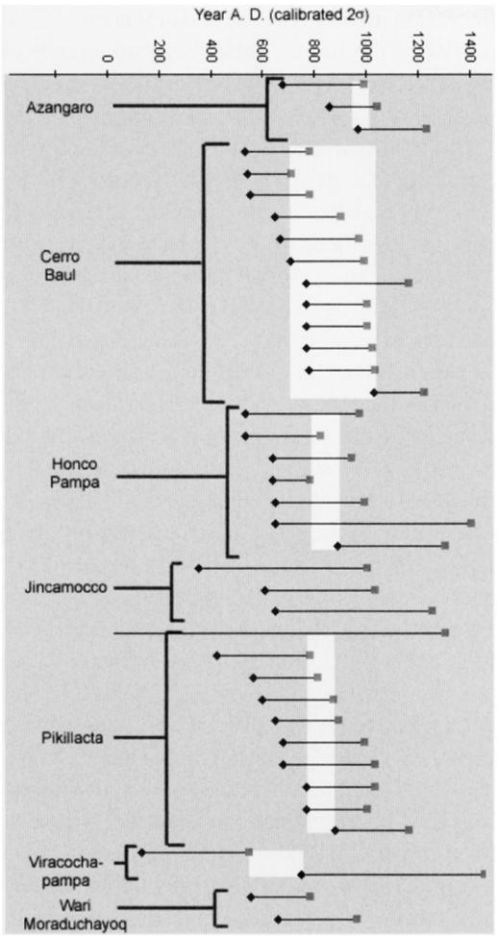

Figure 11. Distributions of calibrated ^{14}C dates from Wari sites. White highlights indicate the minimum overlap between the 95% confidence intervals for all dates of each site.

more than 5 m in length and was 2.3 m wide.

Twelve radiocarbon dates have been processed from Cerro Baúl to date (Figure 11). Of these 12, three emanate from the residential sector A. These three dates represent the organic household remodeling that took place throughout the habitation life of these structures. They do not represent the state-instituted construction projects characteristic of the monumental core of the site. The remaining nine dates from the area of public architecture bear on the issue of construction and reconstruction at an institutionalized scale. All radiocarbon dates are from wood beams, most from an intact, but burnt, construction context and others from the final burning episodes in small hearths within the architectural compounds. It is imperative to remember that we are dating the time the wood was harvested and not the date the wood was burned. Wood is scarce in the region and the site is several hundred meters above the meager wood sources near the valley floors. Due to resource scarcity and accessibility, it is unlikely that wood was brought to the site exclusively for use as fuel, or other nonconstruction contexts. Thus, it is likely that all the beams were originally brought to the site as construction material and radiocarbon dates best represent episodes of construction activity.

An examination of the radiocarbon date distributions within the monumental sectors of the site indicate that the majority of dates represent two major phases. Based on the evidence for earlier construction phases at the site, it is likely that the date distribution represents two separate episodes of tree-felling associated with the major construction events. One felling episode was associated with the founding of the settlement and the other with a period of reconstruction during which the large plazas on the eastern half of the architectural core were most likely constructed. These construction episodes can be more accurately dated by combining the radiocarbon dates from each construction phase in order to contract the range of standard deviation inherent in the analysis.

The three first-phase radiocarbon samples (including one sample from sector A) produce a combined, calibrated date with a two sigma range of A.D. 600 to 685. These dates represent the first constructions on Cerro Baúl and indicate that the establishment of the site almost certainly took place in the seventh century A.D., and likely took place around the middle of that century. The six second-phase dates produce a combined, calibrated two sigma range of A.D. 780 to 990 with a one sigma range between A.D. 885 and 965, and all second-phase dates proceed exclusively from the monumental sectors of the site. The two sets of dates are consistent with two episodal construction events; the probability that a single phenomenon is being dated passes a chi-square test at the .05 confidence interval in each case. The phase two T-value is 1.9 with a T-critical value of 11.1 at the .05 level. The phase one T-value is 0.3 with a T-critical of 3.8.

It is also interesting to note the context information from each of these radiocarbon phases. The three early dates all come from secondary use of the wood beams, in construction fill, in a hearth, or in a burnt

offering context, one from each investigated sector of the site. Of the six samples that date to the second construction phase, three are in primary construction contexts—roof or floor beams that have collapsed, one was burnt in a shallow hearth, and the other two are part of an offering event in the ceremonial sector unit 1. These latter two samples also probably represent primary construction contexts since it appears that the fuel for this offering event was probably the last constructed roof of the structure. One additional late date was also collected from the unit 1 offering context and may represent an erroneous second-phase date or could represent the youngest combustible material included as part of the offering fuel.

All of the second-construction-phase ^{14}C dates come from sectors B or C of the site. The lack of late dates from sector A suggests it was not involved in the later massive construction event, presumably because of the lack of public architecture in this sector of the site. If these interpretations are correct there was a massive reconstruction event around A.D. 900 at Cerro Baúl. Furthermore, this event mirrors changes taking place elsewhere in the Wari realm.

Construction Events at Other Wari Sites

The phase 2 construction event from which half of Baúl's ^{14}C dates are derived is manifested in the ceremonial buildings and the patio groups, both of which conform to the D-shaped structures and patio groups found at other Wari provincial centers. At the site of Jincamocco in the Sondondo Valley, Schreiber documents a Wari occupation of Epoch 1B that continues into Epoch 2. The construction style follows the patio group canons seen in MH 1B in the capital, and an earlier Wari (1A) presence is not in evidence, although a local village did exist at the site before the administrative center was built. Two radiocarbon samples were processed to date the construction of the Wari complex (see Figure 11). One date came from below a well-preserved plaster floor in a room that contained fancy Wari Polychrome ceramics and returned cal A.D. 350–1000 calibrated two sigma. The second date from a piece of wood in the mortar of a subfloor canal dated to cal A.D. 650–1250 calibrated two sigma. A carbon date from a secondary trash deposit of Wari related materials dated to 610–1030 calibrated two sigma (Schreiber 1992: 193). The larger error ranges on these dates make them statistically comparable to one another and represent the arrival of the patio-group style as is seen in phase 2 at Cerro Baúl. The combined calibrated date range overlaps quite well with the second construction phase from Cerro Baúl, with a cal A.D. date of 660–980 calibrated two sigma. It is also interesting to note that Schreiber finds evidence that Middle Horizon 1B Ocros pottery may have continued to be used into Epoch 2, a trend also noted at Cerro Baúl (Schreiber 1992:229).

In the Wari heartland at Azángaro, Anders indicates that Wari construction and occupation of this planned, administrative center was confined to Epoch 2. The three radiocarbon dates from the site (Anders 1991) (see Figure 11) produce a combined calibrated date of cal A.D. 890–1030 A.D., calibrated 2 sigma, closely comparable to the set of six dates combined from the second construction phase at Cerro Baúl (cal A.D. 780–990, calibrated 2 sigma). Furthermore, Anders (1991) notes the presence of two trapezoidal structures in the south sector of the site, representing one of the ultimate phases of construction in the formal architectural compounds. This form parallels the trapezoidal structures formed by new wall constructions in the second phase of construction both in units 1 and 8 at Cerro Baúl, significantly altering the pattern compared to earlier phase walls in both units.

At Wari itself, Isbell (1997) has proposed a chronology for the capital city, but further absolute dates must be obtained to test the veracity of this model. However, if the model is accurate, the length of occupation and the major imperial changes taking place in the ninth and tenth centuries A.D. throughout the Central Andes were also reflected in the architecture of the imperial center.

Besides Cerro Baúl, the only Wari site with more than five provenienced radiocarbon dates is Pikillacta in the Cuzco region (McEwan 1991). Radiocarbon date distributions from Pikillacta manifest the same four-century occupation as is evident at Cerro Baúl (see Figure 11). If the dates from Pikillacta construction contexts are isolated from other types of dates, they do fall into an early and late phase. However, early and late dates correspond to the same structures in some instances and the phases are not as tightly defined as at Cerro Baúl. The analog to Cerro Baúl's monumental sector C—Pikillacta's sector 2—has produced six radiocarbon dates, four of which represent secure construction contexts. Excavation unit 37 (Structure 17-2B) produced an early carbon date associated with wood from an upper story of cal. A.D.

Table 2. ^{14}C dates from Wari Administrative Centers Mentioned in the Text.

Site	Uncalibrated date	Date cal A. D. 2σ	Source	Context
Wari Moraduchayoq	1370 ± 60 B. P.	550–780	Isbell et al. 1991:30	Semi-Sub.Temple (SST) fill
Wari Moraduchayoq	1230 ± 60 B. P.	660–960	Isbell et al. 1991:31	SST fill between floors
Jincamocco	1405 ± 135 B. P.[a]	350–1000	Schreiber 1992:193	beneath plaster layer T2/3
Jincamocco	1070 ± 125 B. P.[b]	650–1250	Schreiber 1992:193	Corr. 1 canal wall mortar
Jincamocco	1220 ± 115 B. P.	610–1030	Schreiber 1992:193	midden in patio 3
Azangaro	1190 ± 75 B. P.[b]	680–990	Anders 1991:185	hearth in complex IV
Azangaro	1070 ± 50 B. P.[b]	860–1040	Anders 1991:185	midden Cr.20e
Azangaro	960 ± 65 B. P.[b]	970–1230	Anders 1991:185	construction fill complex II
Pikillacta	1330 ± 60 B. P.[a]	600–870	McEwan 1996	wood from 17-2B[c]
Pikillacta	1180 ± 60 B. P.[b]	680–990	McEwan 1996	charcoal from 17-2B[c]
Pikillacta	1290 ± 60 B. P.	650–890	McEwan 1996	wood from lintel 39-2B[c]
Pikillacta	1060 ± 50 B. P.[b]	880–1160	McEwan 1996	wood from 39-2B[c]
Pikillacta	1150 ± 80 B. P.[b]	680–1030	McEwan 1996	charcoal on floor 33-2B[c]
Pikillacta	1100 ± 60 B. P.[b]	770–1030	McEwan 1991:112	vine on wall of 104-4B[c]
Pikillacta	1140 ± 60 B. P.[b]	770–1000	McEwan 1991:112	vine on wall of 104-4B[c]
Pikillacta	1430 ± 370 B. P.[a]	400 B.C.–1300	McEwan 1991:112	hearth from 24-4D[c]
Pikillacta	1350 ± 60 B. P.[a]	560–810	McEwan 1991:111	midden outside arch. core
Pikillacta	1430 ± 90 B. P.[a]	420–780	McEwan 1991:111	wood on floor of 12-2A[c]
Viracochapampa	1700 ± 80 B. P.	130–540	Topic 1991:159	NA
Viracochapampa	820 ± 180 B. P.	750–1450	Topic 1991:159	NA
Honco Pampa	1240 ± 90 B. P.	650–990	Isbell 1989:112	AC-5 floor
Honco Pampa	1330 ± 100 B. P.[a]	530–970	Isbell 1989:112	AC-5 subfloor stratum
Honco Pampa	1380 ± 70 B. P.[a]	530–820	Isbell 1989:112	hearth in early floor AC-8
Honco Pampa	1280 ± 70 B. P.	640–40	Isbell 1989: 112	AC-2 floor pit
Honco Pampa	896 ± 115 B. P.	890–300	Buse	NA
Honco Pampa	956 ± 210 B. P.	650–400	Buse	NA
Honco Pampa	991 ± 110 B. P.	640–80	Buse	NA

[a] One of 10 dates used in the calculation of the phase 1 Wari expansion.
[b] One of the 15 dates used in the calculation of the phase 2 Wari construction style.
[c] note that all Pikillacta context information refers to structure designations and not excavation unit numbers. The number after the hyphen refers to the sector in which the structure resides. All samples are on charcoal unless otherwise noted.

600–870, calibrated 2 sigma, and a later phase date of charcoal from an upper storey context of cal. A.D. 680–990, calibrated 2 sigma. In unit 43, a wood sample from a door lintel produced an early phase date of cal. A.D. 650–890, calibrated 2 sigma., while a later phase date of cal. A.D. 880–1160, calibrated 2 sigma was obtained from carbonized wood from the upper story (McEwan 1996).

Combining the two early phase Pikillacta dates results in a calibrated 2 sigma range of A.D. 640–810 as compared to the early phase range of A.D. 600–685 at Cerro Baúl. The combination of the two later dates from Pikillacta sector 2 results in a two sigma range of A.D. 780-1020, whereas the Cerro Baúl second-phase combined two sigma range is A.D. 780–980. It seems that the broad pattern changes seen at Cerro Baúl with the second phase of construction were perhaps reflected in structural remodeling on a more modest scale at Pikillacta. It is nevertheless significant that changes in the use of Pikillacta, very likely an actual decline in new constructions and investments at the site (Glowacki 1996), were taking place at about the same time as the second construction phase was occurring at Cerro Baúl.

Radiocarbon dates of the architectural remodeling in Wari imperial style seem to be slightly earlier in the northern Wari realm. John and Theresa Topic (1985) have suggested that northern sierra architectural styles are present in the Wari center at Viracochapampa at an early date. The two radiocarbon dates from that site (cal A.D. 130–540, calibrated 2 sigma and A.D. 750–1450, calibrated 2 sigma) are not very informative (Topic 1991:159) (see Figure 11). However, dates from other probable Wari sites in the region indicate a predominance number of samples in the range of A.D. 500 to 700 (Topic 1991:159). Schreiber (1992:271) argues that Viracochapampa was never the focus of formal Wari control; thus relying on Viracochapampa to inform about changes in Wari administration is problematic.

At Honco Pampa, another Wari Administrativo center in the northern realm in the Callejon de Huay-

las, Isbell's excavations produced 4 radiocarbon dates that combine to produce a two sigma range of cal. A.D. 640–780 (see Figure 11). Wari imperial ceramic styles were scarce, but can be predominantly ascribed to Epoch 2 (Isbell 1989:112). It thus appears that the northern sierra experienced the expansion of the architectural reorganization before the capital and the southern provinces, a phenomenon consistent with the idea that Wari adopted certain architectural organizations of the north sierra (Schreiber 1992; Topic 1991; Topic and Topic 1985) as part of the imperial reorganization associated with phase 2 at Cerro Baúl.

The 10 radiocarbon dates with secure contextual information, which are statistically comparable to the phase 1 building event, yield a combined calibrated 2 sigma range of A.D. 615–690. If the15 radiocarbon dates statistically similar to the Cerro Baúl Phase 2 dates are all combined, the resulting calibrated 2 sigma range for this event is A.D. 890–980 (see Tables 1 and 2). It should be noted that both these ranges overlap with all the combined date ranges from within specific sites and significantly narrow the window in which these events took place if they were part of the same phenomenon. It seems most likely that the architectural constructions that constituted the patio-group style in sites like Cerro Baúl and Azángaro emerged there early in the tenth century A.D.

Discussion

At Cerro Baúl, a preponderance of Middle Horizon 1B ceramics is associated with the standing phase 2 architecture in sectors A and B. This association correlates fairly well with the data from Wari itself. In fact, there have been very few vessels with Middle Horizon 2 ceramic styles recovered from Cerro Baúl, although Epoch 2 styles are present at Jincamocco (Schreiber 1992) and at Moraduchayoq in Wari (Wagner 1981), and are exclusively used at Azángaro (Anders 1991). A number of Andeanists have suggested that the patio-group style represents a major imperial reorganization, and it now seems evident at Cerro Baúl. The amazing aspect of the phase 2 Baúl building event is that although it falls in the same ceramic period as the other Wari examples, radiocarbon dates are much later than most Wari scholars would attribute to MH 1B or MH 2. The clear association of a pottery cache containing predominantly Chakipampa-style ceramics with the latest radiocarbon dates at the site indicate that Wari peoples were at Baúl in the tenth century A.D. using Chakipampa ceramics, at least in a ceremonial context. Further ceramic analysis and excavations may indicate that Epoch 2 styles were at use on Cerro Baúl at this time as well, although none have yet been identified.

I will not argue that these data suggest that MH Epoch 1B and Epoch 2 styles were in simultaneous use in the Wari heartland. Further radiocarbon dates from sites like Wari that bear on the patio-group construction style and the imperial reorganization associated with it need to be processed to address this issue. What the dates from Cerro Baúl dates do suggest, however, is that significant new questions about the relationship between the southern colony and the Wari capital need to be addressed. Are sweeping imperial reorganizations being reflected at Baúl, and if so, what is the relationship between their introduction in the capital versus in the provinces?

One possible explanation for the architectural remodeling at Cerro Baúl is that it is an entirely local event. Perhaps Baúl was first established as a defensive outpost, as has been the assumption by scholars working with the issue to this point (Moseley et al. 1991). The architectural reorganization at Baúl may signal a change in its role from defensive outpost to a point of ideological and economic exchange between Wari and Tiwanaku. Recent research on and around Cerro Baúl certainly suggests that in the later phases (ca. A.D. 800–1000) of the Middle Horizon, there was significant interaction between Wari and Tiwanaku, including cohabitation of the upper sierra. The emerging data from other Wari administrative sites, of which much more needs to be collected, suggest that some major changes of a similar nature were taking place throughout the Wari realm at about the same time as the Baúl remodeling. The radiocarbon dates representing these changes at multiple sites may coincidentally fall within the same range as the second construction phase at Cerro Baúl, but the preliminary data from these sites is supportive of a polity-wide reorganization. Additional data need to be collected to provide the evidence to test this hypothesis.

Perhaps even more importantly, what does this new information suggest about the relationship between Wari and Tiwanaku? The dates from Baúl clearly demonstrate a long co-occupation of the Moquegua sierra by the two groups of people. Some of the early interpretations of the Baúl ceramics suggested a Tiwanaku influence on some pieces. Given

the new dates and associations with unit 1 ceramic offerings, perhaps this influence may reflect a "Tiwanakuization" of an established MH 1B assemblage. Could it be that a principal ideological exchange between Wari and Tiwanaku was taking place late in the Middle Horizon? We also note that the abandonment of Baúl roughly conforms to collapse of Moquegua's Tiwanaku colonies and perhaps to the end of the Middle Horizon all together. Were the Wari and Tiwanaku abandonments related?

Scholars working in Moquegua have noted that several Tiwanaku sites in the valley were deliberately and systematically razed. It has been suggested that Wari was involved in the vast destruction of Tiwanaku Chen Chen–style sites in the valley (Moseley et al. 1991). The first dates from Cerro Baúl and the interpretations based on those limited data and the established ceramic chronologies would have prohibited this involvement; according to those early data, Wari had left Moquegua before Chen Chen settlers had even occupied the lower valley, around A.D. 750. The new data from Cerro Baúl indicate that the original proposition is chronologically possible, but the plausibility of this scenario and the relationship between peer polity interaction and imperial collapse awaits further study.

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Note

1. All calibrations and combinations were performed with the Oxcal v3.0d radiocarbon program using the intcal98.14c calibration dataset (Struiver and Kra 1986).

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