

As Wari Weakened: Ritual Transitions in the Terminal Middle Horizon of Moquegua, Peru

By: [Donna J. Nash](#) and Patrick Ryan Williams

Nash, Donna, and Ryan Williams. 2021. As Wari Weakened: Ritual Transitions in the Terminal Middle Horizon of Moquegua, Peru. In *Ritual in Collapsing and Regenerating Archaic States*, edited by Joanne Murphy, pp. 77-99. London: Routledge.

This is an Accepted Manuscript of a book chapter published by Routledge in *Ritual in Collapsing and Regenerating Archaic States* on 29 September 2020, available online:

<http://www.routledge.com/9780367230265>

*****© 2021 The Authors. Reprinted with permission. No further reproduction is authorized without written permission from Routledge. This version of the document is not the version of record. *****

Abstract:

Empires are expansive states that incorporate other groups. Their extension may result from conquest, colonization, marriage alliance, or in modern times, purchase. These processes can be disruptive to subordinate groups but may also open up new trade routes and offer opportunities to cooperative individuals. Successful, long-lived empires find ways to integrate subordinate polities and typically devise a range of strategies to do so. In other words, imperial polities that fall apart after a hundred years or so are more common than those that manage to maintain cooperation among elite ranks and stay together over the course of several centuries. The formation of strong relationships that maintain such polities are often constituted as state institutions, which involve a relatively standard set of activities, some of which were rituals. These rituals do not have to pertain to religion, but may have promoted adherence to ideals, legitimized the power of state officials, and reified the existence of the state within the natural order of things.

Keywords: Wari Empire | Moquegua | ritual | iconography | Middle Horizon

Chapter:

Empires are expansive states that incorporate other groups. Their extension may result from conquest, colonization, marriage alliance, or in modern times, purchase. These processes can be disruptive to subordinate groups but may also open up new trade routes and offer opportunities to cooperative individuals. Successful, long-lived empires find ways to integrate subordinate polities and typically devise a range of strategies to do so. In other words, imperial polities that fall apart after a hundred years or so are more common than those that manage to maintain cooperation among elite ranks and stay together over the course of several centuries. The formation of strong relationships that maintain such polities are often constituted as state institutions, which involve a relatively standard set of activities, some of which were rituals. These rituals do not have to pertain to religion, but may have promoted adherence to ideals,

legitimized the power of state officials, and reified the existence of the state within the natural order of things.

Institutions are often materialized by formal architecture or monuments in major centers of a state (Nash and Williams 2005). The design of these buildings may provide some clues to the type of rituals performed and the messages communicated to participants during such events (Moore 1996). Iconography embellished these messages and helped reinforce ideals. In this paper, we consider architecture and iconography to propose the types of rituals practiced in these spaces during the Wari Empire. We focus on the region of Moquegua in southern Peru, where Wari ritual was influenced by interactions with Tiwanaku, and ultimately abandoned in the wake of political collapse as both polities broke apart at the end of the Middle Horizon (ca. 550~ 1150 CE). As we will show, if rites performed in these architectural settings and associated iconographic themes were used during the Middle Horizon to legitimize elites, these practices and symbols were completely eradicated in the following period. This suggests a rather abrupt break and rejection of some ritual practices that promoted the power of state elites during the Middle Horizon with the collapse of the Wari Empire, at least in Moquegua.

Ritual and power relations in archaic states

The distinction between ritual versus quotidian activity may not be tangible in all cases (Berggren 2012), since any activity may be ritualized (Bell 1992). Ritual practices do not have to be religious and are so diverse in scope that they defy easy definition (Bell 2007). Archaeologists can examine the ritual actions that generate material traces. Presumably these are created through actions performed by a group of people who share beliefs of how, when, and where a ritual should be conducted (Bourdieu 1977); however, in an imperial setting such rituals may hold different meanings for participants or rituals may be used in an effort to introduce and impose new ideas and beliefs.

Ritual can be a powerful force within an expansive polity. The development of the polity and the incorporation of different subject groups may tug ritual in one direction or another, and ritual associated with the state may not be identical in all provinces, especially if local leaders are left in power. Nevertheless, an imposing imperial polity should be recognizable through patterned remains resulting from ritual practice. These may be observed in the architecture, especially if it was designed and built to house particular institutions, whether these be religious or political in nature (Nash 2017b). In these and other contexts ritual may also be recognized from patterned depositions of artifacts, the presence and arrangement of features, or orientations of sites, sight lines, or processional pathways (e.g., Nash and deFrance 2019). The practice of ritual is an effective way to establish and reinvigorate social relations, including relations of power (Bell 1992).

The relations between people in a society can be formalized by practices affiliated with institutions such as rituals (Bell 1992). These may be staged in venues that coerce comradery and collaboration or in arenas that communicate exclusion and define asymmetrical power relations (Hastorf 2007; Moore 1996; Nash and Williams 2005). Surplus production and labor inputs are essential to the orchestration of many types of rituals. These can originate from communal efforts within a group but may also result from requirements imposed by elites on their subjects.

Ritual events may be used to reify or recast power relations between individuals and groups. Funerals, especially, are ideal occasions for revising or reasserting relations of power between individuals or constituencies (Underhill 2002). Changes in leadership do not necessarily precipitate change in the structure of rituals or their material residues, but rather can occur within the existing ideological frame. For this reason, ritual activity is an essential aspect of archaeological examinations of ancient state politics even when the significance of ritual symbols, paraphernalia, or performances remain unknown (Fogelin 2007).

As we mentioned above, some ritual practices we describe for this imperial frontier setting may have held overlapping, but different meanings for participants originating from distinct groups (e.g., locals, Wari affiliated migrants from another province, Wari elite who resided on Cerro Baul, elite Tiwanaku colonists). In addition, each ritual experience had the potential to shift or reframe ideas (Bell 1992, 1997; Berggren and Nilsson Stutz 2010; Hastorf 2007), hence the potential for differences between Wari imperial provinces or Tiwanaku colonies. Nevertheless, we anticipate that state-sponsored affairs, identified by their high expense in resources and labor inputs, were most likely linked to institutions that promoted Wari hegemony across the empire and would have recognizable cognates in other regions. In other words, we suspect that some of the rituals we describe in this paper were instituted throughout the Wari Empire, and the remains of these performances would be a material marker of Wari political infiltration and occupation or colonization by Wari affiliated populations (Nash 2018).

Collapse: the dissolution of state institutions

The term collapse and its implications have been a matter of debate for several decades (e.g., Tainter 1988; Yoffee and Cowgill 1988), especially after the publication of Jared Diamond's (2005) overly simplistic link between environmental constraints or "overshoot" and political collapse (Tainter 2006, McAnany and Yoffee 2010). Key issues are the definition of collapse, its causes, and aftermath, where more recent studies have emphasized resilience and regeneration (e.g., Faulseit 2016; Schwartz and Nicols 2006). Given the reviews present in other chapters of this volume, we highlight ideas about imperial collapse such as possible responses to the disintegration of a broad interregional network of mutually engaged elite agents and an extensive long-distance network of resource supply and exchange. Both of these were probably supported by or embedded in state institutions.

To define the collapse of an empire we must outline the features of the polity. What is lost when an empire collapses? We would argue that the connective tissue between elite agents in different provinces and their collaboration with the empire's capital dissolves. An empire can collapse without the immediate dissolution of the provincial hierarchy, however, where provincial power relies heavily on resources and authority from the centralized government it is likely that the provincial hierarchy will disintegrate with the power of the imperial capital. In such instances people who were dependent on the empire for their livelihood or security may migrate out of the region or join local groups, essentially fading into the "woodwork." This idea of collapse derives from the understanding that a state, and more so an empire, is a collaborative enterprise held together by cooperative elites. In Stein's words, states "emerged through the dynamic interaction of partly competing, partly cooperating groups or institutional spheres at different levels of social inclusiveness" (Stein 1994: 12). Those people, having established a basis of power, must interact

regularly to maintain the political organization and state institutions that legitimize and maintain their position of power with regard to subordinate groups. Interdependence between elites makes for a stronger unitary polity, whereas segmentary societies are comparatively weaker and more likely to break apart (Stein 1994). This contrasts somewhat with the tenets of resilience theory (Holling and Gunderson 2002) that predict polities become unstable and susceptible to collapse as key elements of the system become more interconnected and interdependent. This may result in a rigidity trap that hinders effective response to environmental disasters (Faulseit 2016; Nash 2017a).

In an empire, the provincial elite reproduce imperial institutions, which are sets of behavior that can be recognized across a state because they are repeated and often occur in spaces with similar architectural configurations such as temples (see Nash and deFrance 2019; Nash and Williams 2005, 2009). Many of these repeated practices may be recognized as rituals. As such, state institutions may be modified over time through practice and negotiation by those with the legitimacy to do so (i.e., elites). The slow transformation of state institutions is not necessarily a harbinger of collapse, but abrupt breaks in the shared practice and overlapping ideas promulgated by repeated participation in institutionalized ritual may correspond with the weakening of the centralized state, a break down in the communication and cooperation of elite affiliates, or both. This concept of collapse may seemingly ignore instances of commoner uprisings, but such "revolutions" (e.g., Couture 2004) must have leaders or organizers, who often come from the lower ranks of the polity's hierarchy and represent a failure of ruling elites to retain positive relations with their subordinates and the broader population. Archaeology of the Wari Empire's capital city has not revealed a destruction horizon that would support this explanation for the empire's collapse, however, little of the site has been systematically examined and evidence of the polity's demise may be found in processes and interactions at its center rather than external processes such as environmental aridity, invasion, or another external factor.

From our perspective, the empire's southern frontier, the archaeology of Moquegua may not be able to explain why the empire collapsed but shifts that took place in settlement patterns and ritual practices can reveal how rituals transformed through time and eventually show if those in Moquegua had started to diverge from those in the core of the polity at some point in time. In addition, the process of cultural change, particularly transformations related to ritual, can provide clues to understand what practices and symbols were related to legitimizing Wari officials versus those that represent broader cosmological ideas that may have been maintained.

Demographic dynamics in Moquegua

The Wari Empire expanded to subjugate people in many regions of the Andes sometime around 600 CE (Figure 5.1). Wari agents likely had some familiarity with these groups through previous interactions. They may have even shared some beliefs derived from encounters at pilgrimage centers or during missions of long-distance exchange (see Goldstein 2000). As the Wari expanded, imperial elites had to devise institutions based on broadly shared concepts to legitimize their control of subject groups, but this does not mean that they would have prohibited domestic practices or quashed cultural diversity. In fact, they may have adopted conventions from subject groups to facilitate their incorporation.

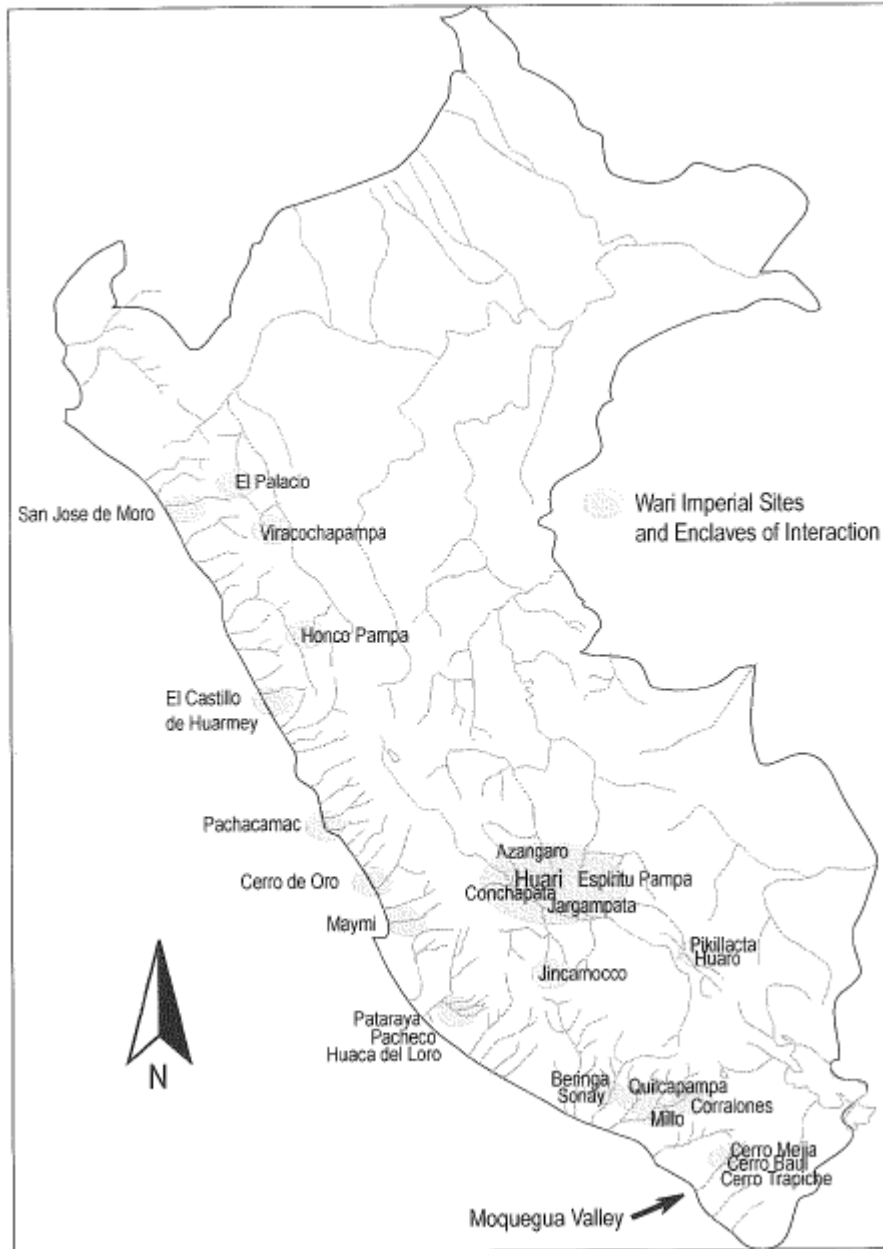


Figure 5.1. The map indicates monumental Wari sites in gray areas, as well as sites built in indigenous styles but with a substantial amount of Wari-style goods, such as pottery, textiles, or both.

Some areas of Moquegua may have been relatively empty when the Wari arrived (Figure 5.2). There were many small Huaracane villages in the middle valley during the Formative period, however, none have dates or seem to have been occupied between 370 and 600 CE. During this period, it seems that the population may have been concentrated on the coast, which appears to have been largely depopulated upon Wari arrival (Owen 1993). Huaracane communities were once again occupied early in the seventh century, and shortly thereafter Tiwanaku colonists established settlements in the middle valley (Goldstein 2005; Goldstein and Owen 2001). Somewhat later, after 750 CE, there was a resurgence on the coast with the emergence of Chiribaya (Lozada 1998; cf Owen 2002). All of these groups interacted and influenced each other, but for the purpose of this paper we focus on Wari and Tiwanaku.

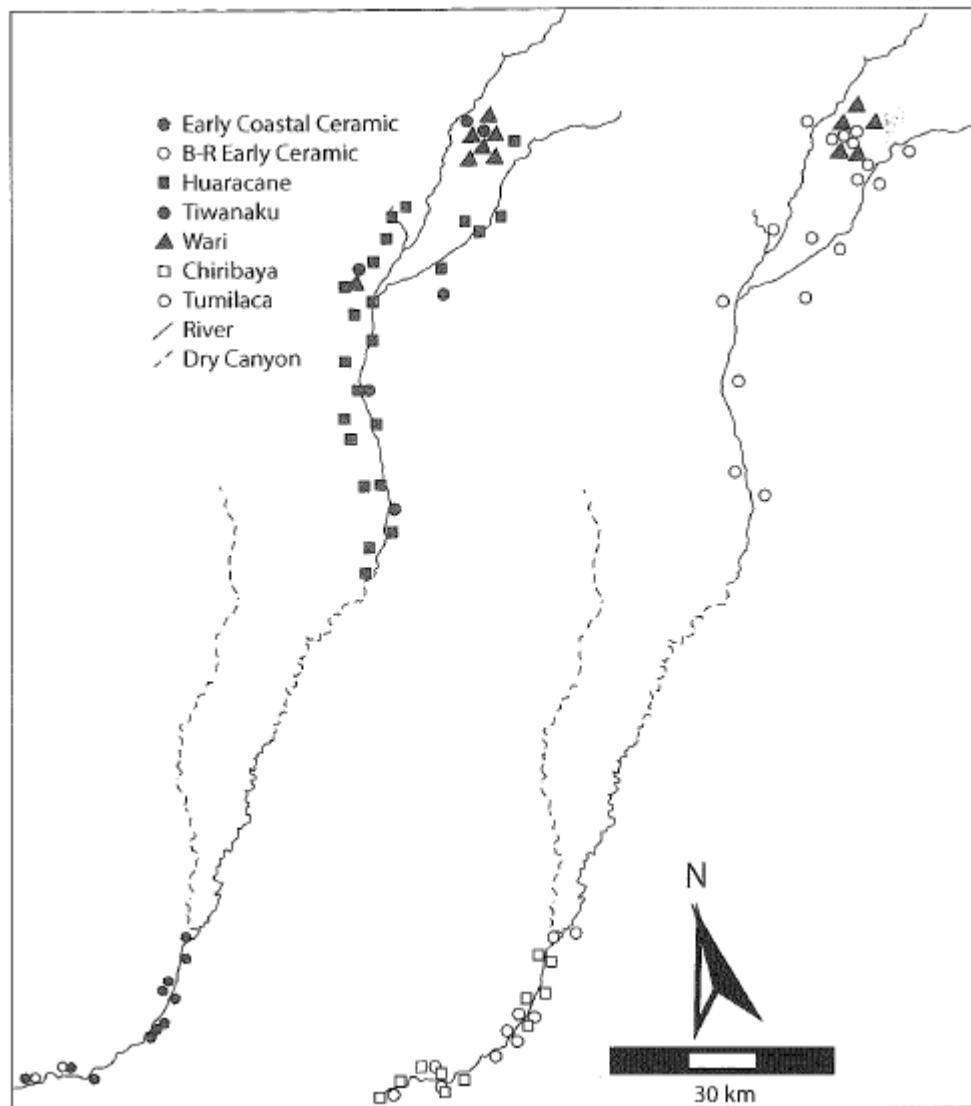


Figure 5.2. The maps show settlement patterns in the Moquegua region, also known as the Osmore River. On the left the maps show sites occupied during the Formative Period and Middle Horizon. Huaracane sites and those of the Early Coastal Preceramic may not have been occupied simultaneously. On the right the map shows sites that were occupied into the Terminal Middle Horizon. Both maps are schematic to provide a sense of the relations between occupational zones, and not all sites are shown.

Our excavations of Wari settlements in Moquegua have uncovered the remains of ritual actions that can be traced to the Wari imperial heartland. There are also indications of the blending of Wari and Tiwanaku ritual, both in domestic settings and more public venues of ritual performance (Nash 2015, Williams and Nash 2016). Here we highlight a few of these activities.

Ritual in the Middle Horizon (ca. 600-950 CE)

The provincial center of Cerro Baul was built and occupied by 680 CE (Nash 2017b). It was the focus of elite activity and had a number of different contexts where rituals were performed (Figure 5.3). There are two D-shaped temples; two ritual complexes aligned with mountain

peaks, and several areas designed for feasting activity, which presumably brought elite Wari officials together with leaders from Tiwanaku, Huaracane, and Chiribaya communities (Moseley et al. 2005).

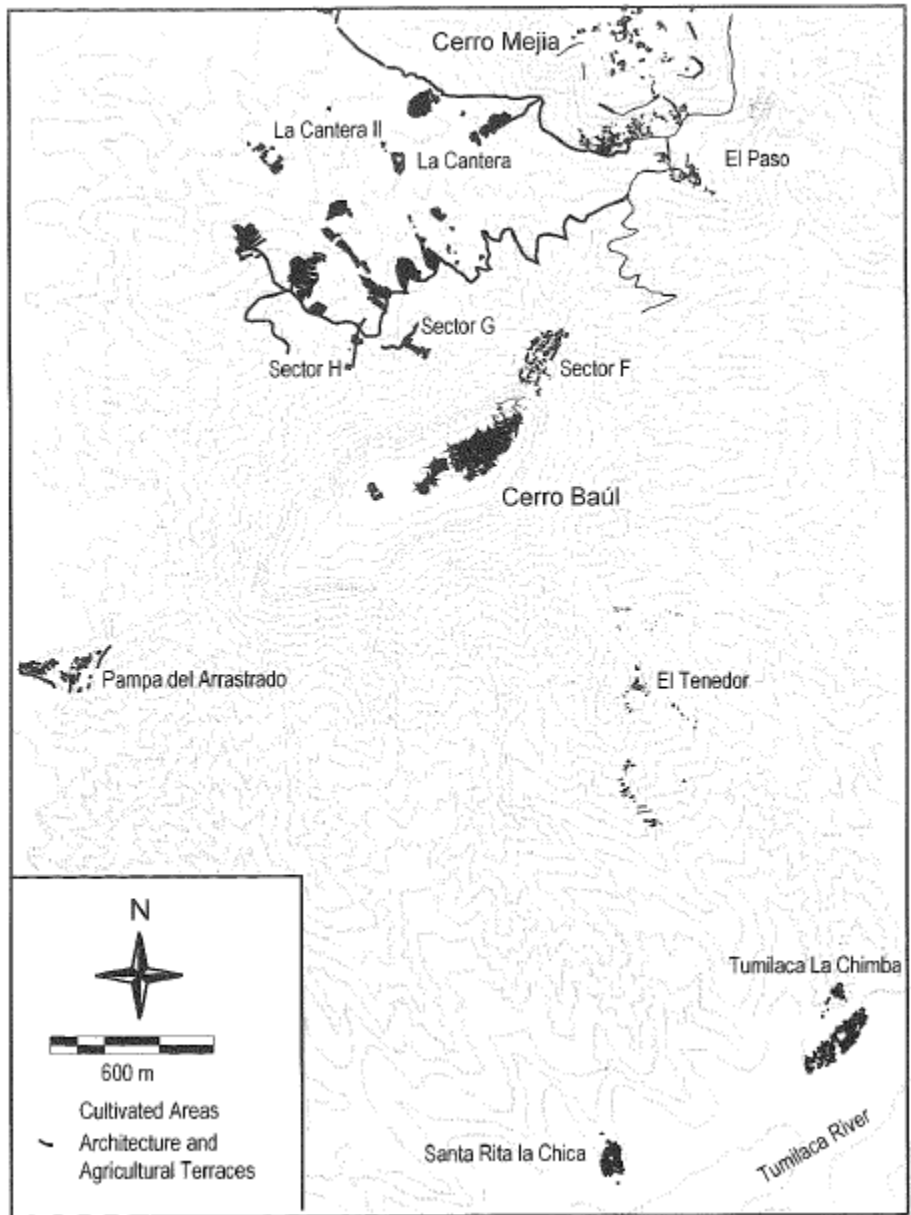


Figure 5.3. The map shows domestic and monumental architecture presently visible on the surface around the hills of Cerro Baul and Cerro Mejia. The occupation in this zone changed through time with Terminal-Middle-Horizon architecture built on top of and obscuring settlement patterns from early periods, as well as landslide deposits that buried some sites.

On the adjacent hill of Cerro Mejia, there is a large public complex, where platforms flank the east and north sides of a large plaza. There are also two elite residential compounds that share features with the palace on Cerro Baul and exhibit evidence of feasting and political gatherings.

In the areas flanking Cerro Baul and Cerro Mejia, there are also tripartite complexes, which appear to be modest versions of a local Tiwanaku temple at the middle-valley site of Omo (Williams and Nash 2002). These seem to have been constructed after 800 CE and reflect a growing shift toward localized versions of Tiwanaku practice. These structures will be discussed below as they appear to pertain to a transitional period that coincides with the establishment of Tumulaca communities in the areas around Cerro Baul.

These different structures were likely used for diverse rituals celebrating myths, calendar events, and rites linked to the lives of individuals such as births, marriage, and death. Defining these discrete events for a prehistoric society poses a clear challenge, but we try to link some of these spaces with iconographic representations, meaning, and general ritual activities.

House space and cosmology

The Wari Empire is notable for its distinctive canon of architecture. Built at the capital and provincial centers, a chief component of this tradition is the Wari patio group, which consists of an enclosed patio with rooms on all four sides. These units are often components of larger compounds, but stand alone at some sites. Many of these structures were elite residences, where feasting and the consumption of *chicha* (a fermented beverage) took place. These structures are found to have burials under the floors, and upon abandonment many were ritually closed, which involved the placement of objects on floors and in shallow pits, burned offerings of textiles, and food, as well as the smashing of ceramic vessels (Cook 1987; Edwards and Schreiber 2014; Glowacki 2012; Groleau 2009; Isbell et al. 1991; Nash 2014).

In Moquegua, we have identified four such structures. Two are on the summit of Cerro Mejia, one is in the Sector A palace on Cerro Baul, and the fourth is part of the central compound on Baul's summit—it was used to brew large quantities of *chicha* (Nash 2010). This complex may also be a palace, but more research is needed to confirm this. These four compounds also have semi-public spaces where visitors could be hosted at gatherings of socio-political import. The somewhat standardized configuration of these spaces and commonly shared features may have communicated meanings regarding the order of the Wari cosmos or reinforced the empire's ideology (Nash 2017c).

For instance, the three residential compounds all have platforms, which are positioned on the eastern side of a patio or plaza. This orientation may align with the snow-capped peak of Arundane, or—as we discuss further below—it may also relate to the direction of the rising sun, especially since the mountain would not have been visible within two of the three residential compounds. The walls of the compound would have blocked the view. One of the elite compounds and the plaza presumably used for drinking adjacent to the brewery both had niches placed on eastern walls, which may also indicate that east was a prestigious direction.

This idea that the sun held ideological importance may be supported by the prevalence of drinking cups with rayed heads (Figure 5.4). Two have been recovered from the Sector A palace and at least four have been found in the brewery (Moseley et al. 2005: 17267, Figure 8). Rayed heads as they are depicted on the gateway of the sun at Tiwanaku are part of a decorative band that may represent a wall of the Kalasasaya, a monument in the core of the highland city. From

inside the Kalasasaya, one can observe the western wall where the sun sets directly over a series of 11 pilasters, which mark its movements from summer to winter solstice (Benitez 2009:57, Figure 12: Janusek 2015). Solar observations of the sun's rise at equinox can also be viewed through the Eastern Gate of the Kalasasaya. In fact, this gate's placement is not symmetrically located, but was offset to make this observation.



Figure 5.4. Examples of cups with rayed heads. The vessel on the left was recovered from the palace and the tumbler on the right was recovered from the brewery.

Cerro Baul does not seem to have any features for viewing the sunset in the west. However, the temple of Arundane had a portal, and a viewer standing on or in front of the altar in Room B could have observed the sun's rise in the east on the day of the solstice over its left margin (Fitzgerald et al. 2018). The placement of the portal is also offset, or not centrally located in this structure either (Williams and Nash 2016: 143, Figure 6.3). A building with a similar form was excavated in 1903 at Tiwanaku adjacent to the Kalasasaya (see Vranich 2009:20, Figure 9). The alignment of the sun rise along one edge resembles the alignments noted in the Kalasasaya (see Benitez 2009).

Since rayed heads were used to represent the sun on the sculpted gateway at Tiwanaku, it is possible that rayed heads on other media also depict the sun. If this is the case, drinking vessels with rayed heads may have been related to libations or toasts celebrating the sun. A ritual carried out by Inka emperors who claimed to have descended from the sun is illustrated by Guaman Poma de Ayala (2009:190, Figure 246/248). The image shows it was performed by the royal couple in June during which Inti Raymi was held over several days to celebrate the solstice. In the image, four cups are present. One is held by the Inka emperor, while another is being carried to the sun by a winged figure. The Inka empress is pouring chicha into a third cup, and a fourth is

beside her on the ground. Presumably, she is preparing to toast the sun as well. This practice may have some antiquity because several sets of four cups have been found on Cerro Baul (e.g., Nash 2012a:95, Figure 68), some of which feature the rayed head iconography (e.g., Williams et al. 2001:Figure 19). It is also difficult to ignore the resemblance between the winged figure in Guaman Poma's image and winged attendants (also called profile figures) in Wari and Tiwanaku iconography (e.g., Knobloch 2012:129, Figure 102, see also illustrations in Makowski 2001).

Solar iconography may convey meaning related to time keeping. It is quite possible that the sun was used to keep time, and its passage through the sky was marked by libations, toasts, and drinking. A routine calendar of rituals marking the passage of the sun may have brought elites together on a regular basis, which would facilitate communication, and the management of resources in the provinces. Feasting remains from the Sector A palace suggest that coastal elites, likely affiliated with the Chiribaya, may have participated in some of these rituals because ocean fish and coastal camelids were present among the food remains (deFrance 2014).

Mountain worship

There are many lines of evidence indicating that the Wari in Ayacucho and other Andean groups, including Tiwanaku, worshiped mountains as powerful entities. Modern traditions, which view mountains as entities that control the supply of river runoff used to water crops and chthonic forces that ensured the reproductive success of fields and livestock, may have great antiquity (Williams and Nash 2006). D-shaped temples are features unique to Wari, which seem to have developed from earlier, round structures (Cook 2001; Leoni 2006). At the pre-imperial site of Nawinpukio the doorway of a round ritual structure aligns with the sacred peak of Rasuwillka for the purpose of mountain worship (Leoni 2006). The fact that both examples on Cerro Baul are oriented so that the peaks of Picchu Picchu are visible through their north-facing doorways seems to confirm this affiliation (Figure 5.5).

These temples are relatively small, roughly 10 m (unit 5 in Sector B) and 12 m (unit 10 in Sector C) in diameter and would not have accommodated large groups; however, each is situated on the southern edge of a plaza. This configuration may have divided participants in two groups: those who could enter and those who could not (Nash and Williams 2005). Rites performed in D-shaped temples were possibly limited to priests, initiates, or members of a specific kin group. Since there are two temples, it is also possible that each served a different faction or moiety, or since D-shaped temples are often found in pairs, perhaps both were necessary to perform complementary rituals of some kind.

At the Wari capital and Conchopata, a secondary site in the heartland, evidence suggests these structures were used for human sacrifice (Cook 2001), rites associated with warriors (Ochatoma and Cabrera 2002) including the production or curation of trophy heads (Tung 2008), observations associated with timekeeping (Ochatoma et al. 2015), ancestor veneration, and the consumption of chicha (Cook 2001; Isbell 2000; for a more detailed discussion see Williams and Nash 2016).

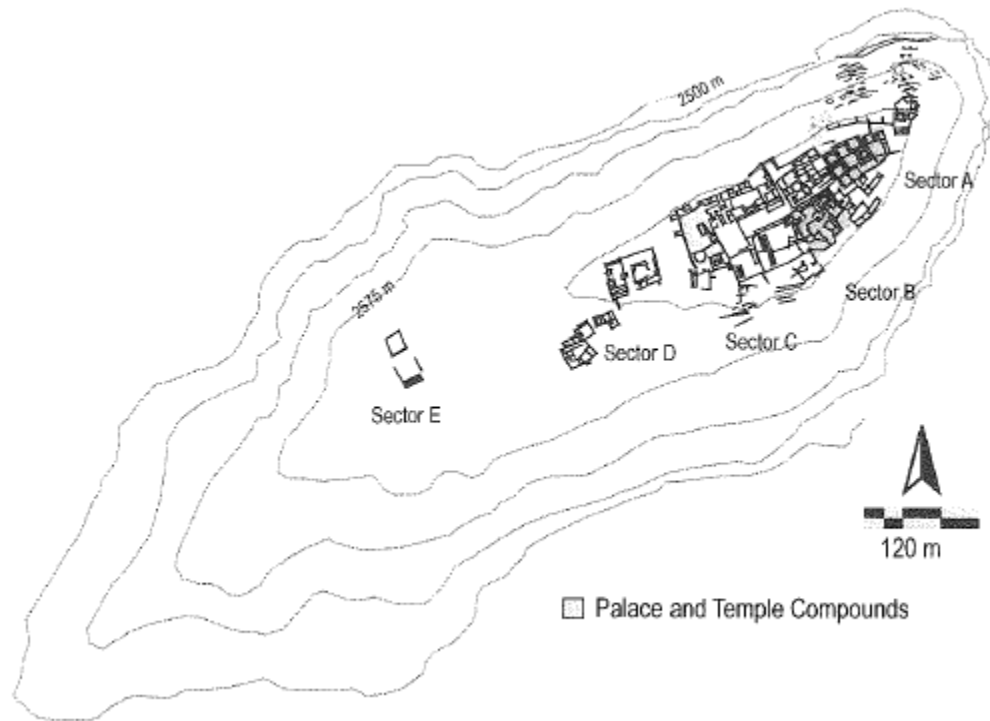


Figure 5.5. The map shows the architecture on the summit of Cerro Baul. The palace in Sector A, the brewery in Sector B, and the two D-shaped temple compounds in Sectors B and C are shaded in gray.

The D-shaped temples at Cerro Baul were disturbed and add little clarity, but associated rooms within the compound near Unit 10 provide some clues to infer ritual activities. In an area called the temple annex (Unit 26), one small room contained a smashed drum decorated with dancing figures and a set of four broken bowls, perhaps for libations or toasts. In the patio of the annex, which may have provided housing for priests or a storage space for paraphernalia, a nearly entire articulated camelid was uncovered. It initially appeared to have been a costly offering, but analysis revealed the animal had been butchered, the meat was removed and presumably consumed before the skeletal elements were placed on the patio floor (de France 2014; Moseley et al. 2005). The other D-shaped temple, Unit 5, also had an attached storage room with a set of gourd bowls, one with a pyro-engraved butterfly (Chacaltana and Nash 2009). These finds do support the ideas that feasting may have been accompanied by beating drums and dance performances. There are no D-shaped temples at other sites in Moquegua, thus it would seem that rituals associated with these structures were restricted to individuals affiliated with the Wari Empire on Cerro Baul (Nash and Williams 2005).

In contrast, the open plaza-platform complex located on the summit of Cerro Baul has a counterpart on Cerro Mejia. These venues were larger and perhaps more inclusive. These two complexes align with different mountains. On Cerro Baul individuals performing on the platform would have done so with Picchu Picchu as a backdrop; perhaps officials served as intermediaries with this distant sacred peak. The complex on Cerro Baul incorporates three elements: a low, two-tiered platform, a higher stepped-mound, and a slightly trapezoidal sunken court in between.

On Cerro Mejia there are two pairs of platforms, with two different orientations (Figure 5.6). The set on the eastern edge of the plaza is placed side by side on a low rise with the peaks of

Arundane visible in the background. Two platforms situated to the northeast are positioned one in front of the other. These may have aligned with the peak of Tixsani, which is not visible per se, but may have been important to itinerant herders. Alternatively, this construction may have served another ritual purpose.

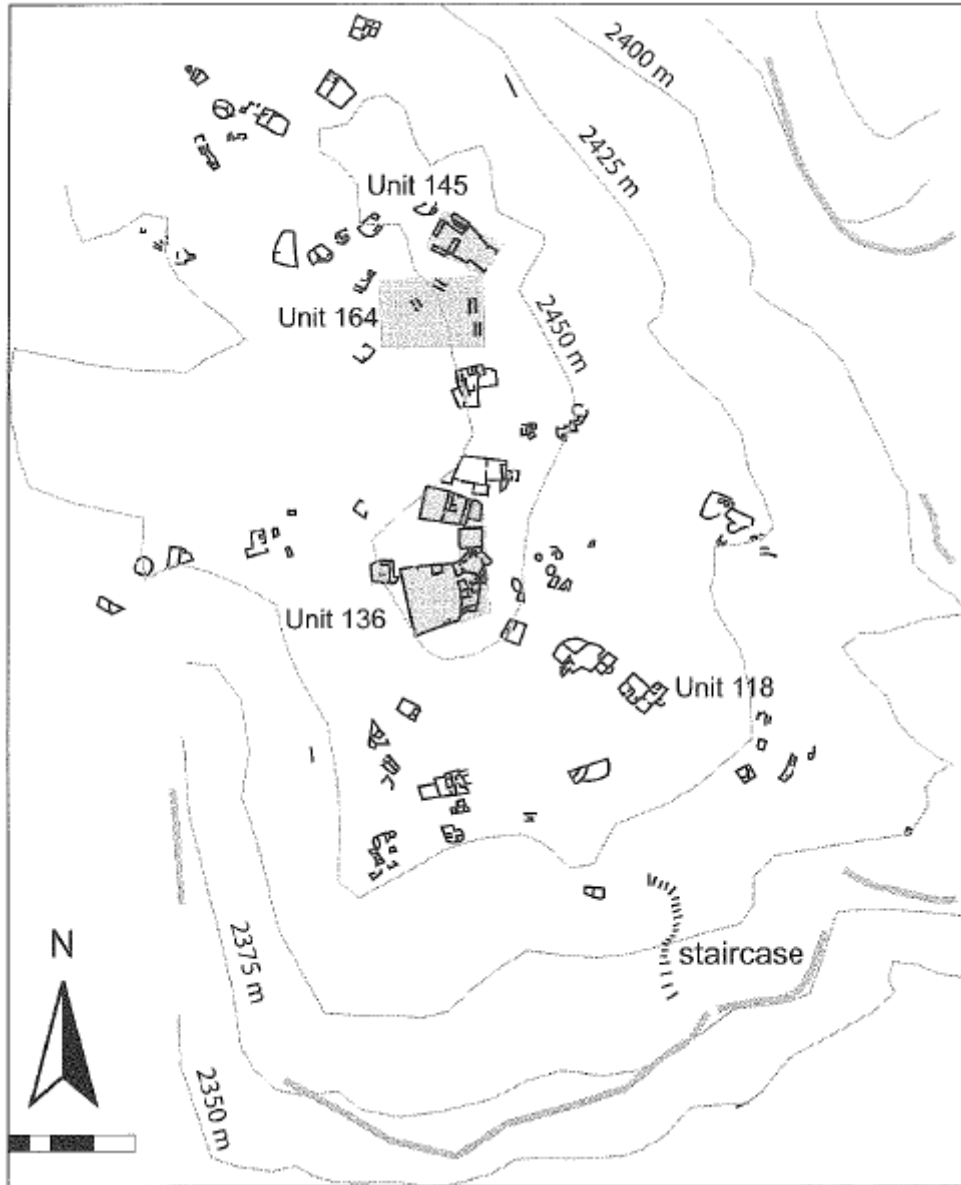


Figure 5.6. The map shows the architecture present on the summit of Cerro Mejia. Two elite residences with patio group components, Units 136 and 145, are shaded gray. The central ceremonial complex, Unit 164, is also shaded.

If we look at scenes represented on ceramic vessels and textiles, we may propose possible uses for such venues. The platforms situated side by side may have facilitated processions of some form. These have been depicted on ceramic vessels recovered from Conchopata, however, they feature a single central figure approached by two groups of converging figures. This iconography is also present on the gateway of the sun at Tiwanaku. Individual participants such as profile attendants or the central figure, which is called the front face deity or staff god, are represented

on various media. A large Wari urn from the south coast site of Pacheco shows both a male and female version of the staff god (Bergh 2012:Figures 132c and 132d). It is possible that the paired platforms on Cerro Mejia provided a stage to perform rituals related to complementary male and female actors, perhaps in relation to rituals related to fertility.

Scholars studying the earlier and contemporaneous phases of the south coast Nasca culture have presented a convincing case based on iconography, which ties the taking of trophy heads to agriculture, in which heads are thought of as seeds that sprout new growth (Carmichael 1994). The same vessel from Pacheco, which illustrates male and female staff gods, may also illustrate this idea (Bergh 2012, Figure 132b). It depicts flowering plants emerging from a rayed head.¹

In iconography rayed heads are also associated with tiered platforms or stylized mountains. This imagery predates the Middle Horizon and has been identified on ceramics and textiles in several regions (Isbell and Knobloch 2009). This may explain the prevalence of platforms, or the configuration of the adjacent platform-terraces on Cerro Mejia. In addition, these ceremonial spaces may have been associated with the display of trophy heads and human sacrifice. One exemplary example of Wari modeled polychrome pottery represents four figures standing on a tiered platform or pyramid (see Bonavia 1994). The two figures on the lower level are a warrior holding a shield, who has face paint, and wears gold ornaments. He is holding the hair of a figure absent of clothes but with face paint, gold ear spools, gold bracelets, and white necklaces, presumably a captured elite person. The figures on the upper level each hold a black and white banded staff, and one is holding a cup, presumably filled with chicha. It is possible that the captive will be sacrificed, perhaps decapitated to ensure fertility for the coming year; however, this ritual may have more political overtones. Interpreting such representations is tenuous and speculative at the present time, but should not be ignored when investigating ritual architecture. It is possible that platforms at Cerro Baul and other sites had multiple ritual uses that had different origins or overlapping but somewhat divergent meanings.

The design of platform complexes in Moquegua may materialize syncretic rituals performed by Wari with the local Tiwanaku elite. Tiwanaku art also portrays disarticulated heads, such as the sculptures of pumas holding human heads (called *chachapumas*), one of which was recovered from the Akapana pyramid at Tiwanaku (Kolata 2004:110, Figure 4.33). Excavation at the base of this pyramid also revealed human remains that represent sacrifice victims or bodies violently dismembered shortly following death (Blom et al. 2003). The Akapana was a central monument in the core of the city, which aligns with Mount Kimsachata and has been interpreted as an effigy mountain built in the ritual core of the capital city (Kolata 1993). In this respect, Wari and Tiwanaku rituals were seemingly compatible or became so through their mutual interaction in Moquegua during the Middle Horizon. As Nash (2015) has argued elsewhere, elite intermarriage between Wari and Tiwanaku may have contributed to this blending. It is possible that human sacrifices took place in D-shaped temples in the Wari heartland and perhaps on Cerro Baul, but may have moved to these other, more open venues, which included mountain effigies as platforms to incorporate participants from Tiwanaku.

¹ Isbell and Knobloch (2009) contend that rayed heads should be considered as different from the anthropomorphic being with rayed headdress and full body that holds two staffs and/or weapons. These images have their origin before the Middle Horizon and were depicted in several regions in association with platform structures.

Ritual in the Terminal Middle Horizon (ca. 950-1150 CE)

On the slopes of Cerro Baul sometime after 800 CE several small Tiwanaku communities were established. Tripartite ritual structures, which bear an ephemeral similarity to a monumental Tiwanaku temple in the middle valley, may have been built by these Tiwanaku settlers, but the structures may have been built later in time (Figure 5.3). The location of these temples would not have permitted participants to view distant mountain peaks. Instead, two seem to be directed southeast toward Cerro Baul as a sacred mountain, whereas the example at El Paso appears to be oriented toward the east and the Arundane Volcano, although it would not have been visible from the temple itself. It is also possible that these monuments were not related to mountain worship, but rather were devoted to other matters.

The layout of these structures may be modeled after the Omo Temple, which is located at a Tiwanaku settlement in the middle valley. This structure is divided into three parts: a large plaza measuring 42 by 57 meters (2394 m²), a smaller intermediate plaza (20 by 37 meters or 740 m²) with two long rooms along its two shorter sides, and an elevated platform mound (34 by 36 meters or 1224 m²) with several rooms and a sunken court. The platform mound has a single entrance, which had a door that could be closed. The central area of the mound had a sunken court, which was surrounded by several small rooms or shrines. This design suggests exclusive access (Goldstein and Palacios 2015; Goldstein and Sitek 2018). The complex abuts a natural hill but the majority of the mound's volume appears to have been constructed.

The three examples near Cerro Baul have three "courts," but these are not necessarily attached or follow the same dimensions. Also, the highest segment is not a mound, instead the elevation of these structures relies on the slope of the hill. This would have mitigated the amount of labor required to elevate some portions over others. The complex built at La Cantera appears superimposed on top of Wari agricultural features (Nash and Williams 2005). Nash (2002) found that the complex at El Paso was also built on agricultural soil and earlier Wari constructions, one of which included a hearth no earlier than 838 CE (AA41954, 1174±43 BP or 838-996 cal CE, calibrated using Oxcal 4.3 using Southern Hemisphere calibration curve-SHCal, see Hogg et al. 2013; Marsh et al. 2018). Thus, it appears that the construction and use of the complexes at El Paso and La Cantera followed some form of reorganization of the Wari agricultural system that took place sometime after 850 CE.

The La Cantera temple is on the northern flank of Cerro Baul (Sector I). It was sampled by Bruce Owen in 1997 and by the Cerro Baul project directed by Williams in 2002. The complex has three enclosed plazas that measure approximately 900 m² in the lower-northern plaza, 240 m² in the middle plaza, and 465 m² in the southern-upper plaza. Each plaza was surrounded by a low, double-faced stone wall with an average height of 50 cm. It is possible that adobe bricks formed upper walls of these structures and have not preserved. Excavations in some areas revealed layers of what could be the redeposited remains of adobe bricks.

In the upper plaza, Owen excavated a pit feature that contained the remains of several blackware Tiwanaku keros and llama bones. He also encountered a feature that he interpreted as containing cooking remains. He radiocarbon dated two samples of carbonized wood from those pits, (Beta 127211 1080±70BP or 876-1 180 cal CE and Beta 134693 1180±80 BP or 756-1033 cal CE,

Owen 2005; Owen and Goldstein 2001, calibrated with Oxcal 4.3 using the Southern Hemisphere calibration curve-SH Cal 13 see Hogg et al. 2013). The 2002 Cerro Baul project also excavated in the upper space, on the western side of the plaza. A pit feature, approximately 65 cm in diameter was discovered in this excavation (Unit 36), and it also contained burned material, camelid bones, and ceramic fragments, including blackware sherds, presumably from vessels similar to those found by Owen on the eastern side of the plaza. These offering pits likely reflect ritual depositions of camelid parts and ceramic vessels in an area of restricted access. The depositions were presumably made by people who used these religious structures. It is unclear if the depositions were part of the construction or decommission of the complex.

Also during 2002, a large ash pit was partially excavated in the northeast corner of the lower, northern plaza (Unit 35). The ash feature had two visible strata and incorporated unburned ceramic sherds, camelid bones, obsidian, and a marine univalve. A CI 4 sample from the lower of two strata was dated to 1032-1220 cal CE (AA53348 939+-45 BP calibrated with Oxcal 4.3 using the Southern Hemisphere calibration curve-SHCal 13 see Hogg et al. 2013). The deposit may pertain to two cleaning events following rituals staged in the structure, but given the small size of the excavation we cannot offer a definitive interpretation.

A series of low-profile terraces occupied the slope just below the tripartite ritual structure. Excavation of one of these terraces recovered domestic materials such as ceramic sherds, animal bones, rhyolite debitage, and several hand grindstone or "manos." Limited dispersions of carbonized material were also present. A radiocarbon sample from this context dated to 970-1162 cal CE (AA53349 1042+-49 BP calibrated with Oxcal 4.3 using the Southern Hemisphere calibration curve-SHCal 13 see Hogg et al. 2013), which is roughly contemporaneous with the dates for activity in the ritual structure.

These terraces are 35 meters away from the ritual structure's lower wall. They are less substantial than the Tiwanaku communities that were located on adjacent ridges. It is possible they may represent temporary housing occupied by people participating in ritual events held over the course of several days. Alternatively, since some of the more substantial communities located within the dry ravines downstream from the rustic temple complex such as the buried settlement found at the Cancha de Yacango, were covered by a massive mudslide that buried houses and people ca. 900-1000 CE, these terraces may have been a temporary refuge for the survivors from these communities.

Transformation

This natural disaster did not lead to Wari collapse, but it does seem to have changed the nature of public ceremony in the upper valley. This event may have also had long-term repercussions for agricultural productivity in the middle valley and perhaps the coast. Williams (2002) has suggested that Tiwanaku sites were abandoned ca. 950 CE due to a lack of water caused by upstream use of these resources by Wari affiliated populations. These strains on water resources may have been related to shifts in the Wari agricultural system or shifts in precipitation patterns, which also started at this time, but grew much worse by 1100 CE.

Populations that abandoned the large middle-valley Tiwanaku settlements dispersed and formed much smaller villages, referred to as the Tumulaca phase, which maintained some Tiwanaku cultural features but also exhibited notable shifts in ceramic iconography and ritual practice (Figure 5.2). Some of these groups moved upstream in the area around Cerro Baul, whereas others moved to the coast and established communities near the Chiribaya. Sharratt (2016, see also this volume) found that one such community, called Tumulaca La Chimba, lacked a ritual space that emphasized difference, such as a mound or platforms and instead was centrally placed in the community and seemed to be accessible.

A very similar pattern may be attributed to coastal Chiribaya communities, which grew and flourished during the Terminal Middle Horizon and continued after Wari burned down the brewery and abandoned Cerro Baul ca. 1150 CE (Figure 5.2). Researchers have found small sunken courts or semi-subterranean rooms at several Chiribaya sites. These are reminiscent of Formative period ritual structures found in the altiplano and seem to lack features that emphasized difference.

The results of collapse

Cups with rayed heads among Wari sites were only found on Cerro Baul. These were not distributed to subordinate leaders and therefore may have been an exclusive symbol of Wari elites (Nash 2019): one that was rejected by survivors of Wari collapse in Moquegua. Platforms also disappear, perhaps because these were part of the symbolic package affiliated with the solar cult or the more heinous practice of human sacrifice, which chiefs of smaller communities did not have the political capital to demand. It is possible that heads were no longer taken to ensure fertility. After all, this may have failed or been perceived to fail with the onset of a drastic drought around 1150 CE (Williams 2002). It is quite possible that Chiribaya groups devised other types of rituals directed at fertility. It seems that ancestor veneration, the pouring of libations, and other forms of offering endured and took precedence.

In addition, iconographic representations of the staff god, rayed heads, profile attendants, and trophy heads disappear from the iconographic repertoire of many societies across the Andes at this time. These elite symbols seem to have been rejected in favor of more abstract themes and geometric designs. Neither Tumulaca nor Chiribaya used the powerful symbols of the Middle Horizon. They also did not build platforms or houses that resemble those of Wari elites; however, these powerful features of Andean statecraft did not completely disappear. Both of these features were used and spread once again by the Inca Empire (e.g., the diverse platform *ushnu*, Coben 2014; and *Inka kancha*, Protzen 2000).

References

- Bell, Catherine. 1992. *Ritual Theory, Ritual Practice*. Oxford University Press, Oxford.
- Bell, Catherine. 1997. *Ritual: Perspectives and Dimensions*. Oxford University Press, Oxford.
- Bell, Catherine. 2007. Response: Defining the Needs for a Definition. In *The Archaeology of Ritual*, edited by E. Kyriakidis, pp. 277-288. Cotsen Institute of Archaeology, Los Angeles.

- Benitez, Leonardo. 2009. Descendants of the Sun: Calendars, Myth, and the Tiwanaku State. In *Tiwanaku: Papers from the 2005 Mayer Center Symposium at the Denver Art Museum*, edited by Margaret Young-Sanchez, pp. 49-81. Denver Art Museum, Denver.
- Berggren, Asa. 2012. The Interpretation of Depositions in Pits. Is it Time for the Pendulum to Swing Back? *Archaeological dialogues* 19(2): 116-120.
- Berggren, Asa, and Liv Nilsson Stutz. 2010. From Spectator to Critic and Participant: A New Role for Archaeology in Ritual Studies. *Journal of Social Archaeology* 10: 171-197.
- Bergh, Susan (editor). 2012. *Wari: Lords of the ancient Andes*. Thames and Hudson, New York.
- Blom, Deborah, John Janusek, and Jane Buikstra. 2003. A Reevaluation of Human Remains from Tiwanaku. In *Tiwanaku and Its Hinterland: Archaeology and Paleoecology Investigations of an Andean Civilization*, Vol. 2, edited by Alan Kolata, pp.435-446. Smithsonian Institution, Washington, DC.
- Bonavia, Duccio. 1994. *Arte e Historia de Peru Antigua*. Banco del Sur del Peru, Arequipa.
- Bourdieu, Pierre. 1977. *Outline of a Theory of Practice*. Cambridge University Press, Cambridge.
- Carmichael, Patrick. 1994. The Life from Death Continuum in Nasca Imagery. *Andean Past* 4(1): 81-90. Available at: https://digitalcommons.library.umaine.edu/andean_past/vo14/iss1/9. Accessed February 22, 2018.
- Chacaltana Cortez, Sofia, and Donna Nash. 2009. Analisis de las Ofrendas en los Andes Sur Centrales. Las Ofrendas como Tradic6n de Origen Prehispanico: El caso de Cerro Baul, Valle Alto de Moquegua. In *Arqueologia del Area Centro Sur Andino, Actas del Simposio Internacional 30 de junio-2 de Julio de 2005, Arequipa, Peru*, edited by M.S. Ziolkowski, J. Jennings, L.A. Belan Franco, and A. Drusini, pp. 155-180. Varsovia/Lima: ANDES: Boletin del Centro de Estudios Precolobinos de la Universidad de Varsovia, No. 7.
- Coben, Lawrence. 2014. If All the World's a Stage then What's an Ushnu? In *Inca Sacred Space: Landscape Site and Symbols in the Andes*, edited by Frank Meddens, Kate Willis, Colin McEwan, and Nicholas Branch, pp. 233-243 Archetype Publications Ltd, London.
- Cook, Anita. 1987. The Middle Horizon Ceramic Offerings from Conchopata. *R awpa Pacha* 22-23:49-90.
- Cook, Anita. 2001. Huari D-Shaped Structures, Sacrificial Offerings, and Divine Kingship. In *Ritual Sacrifice in Ancient Peru*, edited by E. Benson and A. Cook, pp. 137-163. University of Texas Press, Austin.
- Couture, Nicole. 2004. Monumental Space, Courtly Style, and Elite Life at Tiwanaku. In *Tiwanaku: Ancestors of the Inca*, edited by Margaret Young-Sanchez, 126-135, University of Nebraska Press, Lincoln.

- deFrance, Susan. 2014. The Luxury of Variety: Animals and Social Distinction at the Wari site of Cerro Baul, Southern Peru. In *Animals and Inequality in the Ancient World*, edited by B.S. Arbuckle and S. McCarty, pp. 63-84. University Press of Colorado, Boulder.
- Diamond, Jared. 2005. *Collapse: How Societies Choose to Fail or Succeed*. Viking, New York.
- Edwards, Matthew, and Katarina Schreiber. 2014. Pataraya: The Archaeology of a Wari Outpost in Nasca. *Latin American Antiquity* 25(2):215-233.
- Faulseit, Ronald. 2016. Collapse, Resilience, and Transformation in Complex Societies: Modeling Trends and Understanding Diversity. In *Beyond Collapse: Archaeological Perspectives on Resilience, Revitalization, and Transformation in Complex Societies*, edited by Ronald K. Faulseit, pp. 3-26, Southern Illinois University, Carbondale.
- Fitzgerald, Curran, Cyrus Banikazemi, and Donna Nash. 2018. A Galactic Empire: Celestial Bodies and Imperial Ideology on the Wari Frontier. Paper presented at the 83rd Annual Meeting of the Society for American Archaeology, Washington, DC.
- Fogelin, Lars. 2007. The Archaeology of Religious Ritual. *Annual Review of Anthropology* 36:55-71.
- Glowacki, Mary. 2012. Shattered Ceramics and Offerings. In *Wari: Lords of the Ancient Andes*, edited by Susan Bergh, pp. 145 -158. Thames and Hudson, London.
- Goldstein, Paul. 2000. Exotic Goods and Everyday Chiefs: Long-distance Exchange and Indigenous Sociopolitical Development in the South Central Andes. *Latin American Antiquity* 11 :335-361.
- Goldstein, Paul. 2005. *Andean Diaspora: The Tiwanaku Colonies and the Origins of South American Empire*. University Press of Florida, Gainesville.
- Goldstein, Paul, and Bruce Owen. 2001. Tiwanaku en Moquegua: Las Colonias Altiplanicas. *Boletín de Arqueología PUCP* 5:139-168.
- Goldstein, Paul, and Patricia Palacios. 2015. Excavaciones en el templete Tiwanaku de Omo, Moquegua, Peru. In *El Horizonte Media: Nuevos aportes para el sur de Peru, norte de Chile y Bolivia*, edited by Antti Korpisaari and Juan Chacama, pp. 117-144 Instituto Frances de Estudios Andinos, Lima.
- Goldstein, Paul, and Matthew Sitek. 2018. Plazas and Processional Paths in Tiwanaku Temples: Divergence, convergence, and Encounter at Omo M10, Moquegua, Peru. *Latin American Antiquity* 29(3):455-474.
- Groleau, Amy. 2009. Special Finds: Locating Animism in the Archaeological Record. *Cambridge Archaeological Journal* 19:398-406.
- Guaman Poma de Ayala, Felipe. 2009. *The First New Chronicle and Good Government: On the History of the World and the Incas up to 1615*. Translated and edited by Roland Hamilton. University of Texas Press, Austin.

- Hastorf, Christine. 2007. Archaeological Andean Rituals: Performance, Liturgy, and Meaning. In *The Archaeology of Ritual*, edited by E. Kyriakidis, pp. 77-108. Cotsen Institute of Archaeology, Los Angeles.
- Hogg, A. G., Q. Hua, P. Blackwell, M. Niu, C. Buck, T. Guilderson, T. Heaton, J. Palmer, P. Reimer, R. Reimer, C. Turney, and S. Zimmerman. 2013. SHCal3 Southern Hemisphere Calibration, 0-50,000 Years cal BP. *Radiocarbon* 55(4): 1889-1903.
- Holling, Crawford, and Lance Gunderson. 2002. Resilience and Adaptive Cycles. In *Panarchy: Understanding Transformations in Human and Natural Systems*, edited by Lance H. Gunderson and C. S. Holling, pp. 25-62. Island Press, Washington, D.C.
- Isbell, William. 2000. Repensando el Horizonte Medio: El Caso de Conchopata, Ayacucho, Peru. *Boletín de Arqueología PUCP* 4:9-68.
- Isbell, William, Christina Brewster-Wray, and Linda Spickard. 1991. Architecture and Spatial Organization at Huari. In *Huari Administrative Structure*, edited by William Isbell and Gordon McEwan, pp. 19-53. *Dumbarton Oaks*, Washington, DC.
- Isbell, William, and Patricia Knobloch. 2009. SAIS-The Origin, Development, and Dating of Tiahuanaco-Huari Iconography. In *Tiwanaku: Papers from the 2005 Mayer Center Symposium at the Denver Art Museum*, edited by Margaret Young-Sanchez, pp. 165-210. Denver Art Museum, Boulder.
- Janusek, John. 2015. Of Monoliths and Men: Human-Lithic Encounters and the Production of an Animistic Ecology at Khonkho Wankane. In *The Archaeology of Wak'as*, edited by T. L. Bray, pp. 335-366. University of Colorado Press, Boulder.
- Knobloch, Patricia. 2012. Archives in Clay: The Styles and Stories of Wari Ceramic Artists. In *Wari: Lords of the Ancient Andes*, edited by Susan Bergh, pp.122-143. Cleveland Museum of Art and Thames and Hudson, New York.
- Kolata, Alan. 1993. *The Tiwanaku: Portrait of an Andean Civilization*. Blackwell, New York.
- Kolata, Alan. 2004. The Flow of Cosmic Power: Religion, Ritual, and the People of Tiwanaku. In *Tiwanaku: Ancestors of the Inca*, edited by Margaret Young-Sanchez, pp. 97-125, pp. 49-81. Denver Art Museum, Denver.
- Leoni, Juan. 2006. Ritual and Society in Early Intermediate Period Ayacucho: A View from the Site of Nawinpukyo. In *Andean Archaeology III*, edited by William Isbell and Helaine Silverman, pp. 279-306. Springer, New York.
- Lozada Cerna, Maria Cecilia. 1998. The Sefiorio of Chiribaya: A Bio-Archaeological Study in the Osmore Drainage of Southern Peru. PhD dissertation, Department of Anthropology, University of Chicago, Chicago.
- Makowski, Krzysztof. 2001. Los Personajes Frontales de Baculos en la Iconografía Tiahuanaco y Huari: ¿Terna o Convención?. *Boletín de Arqueología PUCP* 5:337-373.
- Marsh, Erik J., Maria Bruno, Sherilyn Fritz, Paul Baker, Jose Capriles, and Christine Hastorf. 2018. JNTCal, SHCal, or a Mixed Curve? Choosing a 14C Calibration Curve for

Archaeological and Paleoenvironmental Records from Tropical South America.
Radiocarbon 60(I): 1-16.

- McAnany, Patricia, and Normal Yoffee. 2010. Why We Questions Collapse and Study Human Resilience, Ecological Vulnerability, and the Aftermath of Empire, In *Questioning Collapse: Human Resilience, Ecological Vulnerability, and the Aftermath of Empire*, edited by Patricia McAnany and Normal Yoffee, pp 1-17, Cambridge University Press, Cambridge.
- Moore, Jerry. I 996. *Architecture and Power in the Ancient Andes: The Archaeology of Public Buildings*. Cambridge, Cambridge University Press.
- Moseley, Michael, Donna Nash, P. Ryan Williams, and Susan D. de France. 2005. Burning Down the Brewery: Establishing and Evacuating an Ancient Imperial Colony at Cerro Baul, Peru. *The Proceedings of the National Academy of Sciences* 102(48): 17264-17271.
- Nash, Donna. 2002. The Archaeology of Space: Places of Power in the Wari Empire, Dissertation, University of Florida, Gainesville.
- Nash, Donna. 2010. Fine Dining and Fabulous Atmosphere: Feasting Facilities and Political Interaction in the Wari Realm. In *Inside Ancient Kitchens: New Directions in the Study of Daily Meals and Feasting Events*, edited by Elizabeth Klarich, pp. 83-110. University of Colorado Press, Boulder.
- Nash, Donna. 2012a. The Art of Feasting: Building an Empire with Food and Drink. In *Wari: Lords of the Ancient Andes*, edited by Susan Bergh, pp. 82-101. Cleveland Museum of Art and Thames and Hudson, New York.
- Nash, Donna. 2012b. El establecimiento de relaciones de poder a traves del uso del espacio residencial en la provincia Wari de Moquegua. *Bulletin de l'Institut d'Estudes Andines* 41(1): 1-34.
- Nash, Donna. 2014. House Burials or Burying Houses: Elite Wari Mortuary Practices at Cerro Baul, Peru. Paper presented at the 79th Annual Meeting of the Society for American Archaeology, Austin.
- Nash, Donna. 2015. Evidencia de Uniones Matrimoniales entre las Elites Wari Y Tiwanaku de Cerro Baul, Moquegua, Peru. In *El Horizonte Media: Nuevos aportes para el sur de Peru, norte de Chile y Bolivia*, edited by Antti Korpisaari and Juan Chacama, pp. 177-200. Travaux de l'Institut Français d'Estudes Andines tomo 330, Instituto Frances de Estudios Andinos, Lima.
- Nash, Donna. 2017a. Beyond Collapse: Archaeological Perspectives on Resilience, Revitalization, and Transformation of Complex Societies by Ronald Faulseit, ed. *Journal of Anthropological Research* 73(1): 106-107.
- Nash, Donna. 2017b. Cerro Petroglifo: A Planned, but Unfinished Wari Settlement in Moquegua (and what it means). Paper presented at the 45th Annual Midwest Conference on Andean and Amazonian Archaeology and Ethnohistory, Cleveland, February.

- Nash, Donna. 2017c. Clash of the Cosmologies: Vernacular vs. State Housing in the Wari Empire. In *Vernacular Architecture of the Pre-Columbian Americas*, edited by C. Halperin and L. Schwartz, pp. 91-112. London: Routledge.
- Nash, Donna. 2018. Art and Elite Political Machinations in the Middle Horizon Andes. In *Religion and Representation in the Development of Southern Andean Civilization: Tiwanaku, Wari and Transcultural Art of the SAIS (Southern Andean Iconographic Series----800 BC to AD 1000)*, edited by W. H. Isbell and M. Uribe, pp. 467-487. Cotsen Institute of Archaeology at UCLA, Los Angeles.
- Nash, Donna. 2019. Craft Production as an Empowering Strategy in an Emerging Empire. *Journal of Anthropological Research* 75(3): 328-360.
- Nash, Donna J. and Patrick Ryan Williams. 2009. Wari Political Organization on the Southern Periphery. In *Andean Civilization: A Tribute to Michael E. Moseley*, edited by Joyce Marcus and Patrick Ryan Williams, pp. 257-276. Cotsen Institute of Archaeology Press, Los Angeles, Monograph 63.
- Nash, Donna, and R. Monika Barrionuevo. 2008. El Proyecto Arqueológico Asentamientos en Cerro Mejia, 2008 (ACME). Report submitted to INC of Peru. (Available at <https://libres.uncg.edu/ir/uncg/listing.aspx?styp=ti&id=9811>).
- Nash, Donna, and Susan de France. 2019. Plotting Abandonment: Excavating a Ritual Deposit at the Wari Site of Cerro Baul. *Journal of Anthropological Archaeology* 53: 112-132.
- Nash, Donna, and P. Ryan Williams. 2005. Architecture and Power: Relations on the Wari-Tiwanaku Frontier. *Archaeological Papers of the American Anthropological Association* 14: 151-174.
- Ochatoma Paravicino, Jose, and Marth Cabrera Romero. 2002. Religious ideology and military organization in the iconography of a D-shaped ceremonial precinct at Conchopata. In *Andean Archaeology II*, edited by Helaine Silverman and William Isbell, pp. 225-247. Springer, Boston.
- Ochatoma Paravicino, J., Martha Cabrera Romero, and Carlos Mancilla Rojas. 2015. *El area sagrada de Wari: investigaciones arqueológicas en Vegachayuq Moqo*. Universidad Nacional de San Cristobal de Huamanga; Vicerectorado de Investigación.
- Owen, Bruce. 1993. A Model of Multi-ethnicity: State Collapse, Competition, and Social Complexity from Tiwanaku to Chiribaya in the Osmore Valley, Peru. PhD dissertation, Department of Anthropology, University of California, Los Angeles.
- Owen, Bruce. 2002. Marine Carbon Reservoir Age Estimates for the Far South Coast of Peru. *Radiocarbon* 44(3):701-708.
- Owen, Bruce. 2005. Distant Colonies and Explosive Collapse: The Two Stages of the Tiwanaku Diaspora in the Osmore Drainage. *Latin American Antiquity* 16(1): 45-80.
- Owen, Bruce, and Paul Goldstein. 2001. Tiwanaku en Moquegua: Interacciones Regionales y Colapso. *Boletín de Arqueología PUCP* 5:169-188.

- Protzen, Jean-Pierre. 2000. Inca Architecture. In *The Inca World: The Development of Pre-Columbian Peru*, edited by Laura Laurencich Minelli, pp. 193-217, University of Oklahoma Press, Norman.
- Schwartz, Glenn M., and John K. Nicols, eds. 2006. *After Collapse: The Regeneration of Complex Societies*. University of Arizona Press, Tuscon.
- Sharratt, Nicola. 2016. Crafting a Response to Collapse: Ceramic and Textile Production in the Wake of Tiwanaku State Breakdown. In *Beyond Collapse: Archaeological Perspectives on Resilience, Revitalization, and Transformation in Complex Societies*, edited by Ronald L. Faulseit, pp.407-430, Southern Illinois University, Carbondale.
- Stein, Gil. 1994. Segementary States and Organizational Variation in Early Complex Societies: A Rural Perspective, In *Archaeological Views from the Countryside: Village Communities in Early Complex Societies*, edited by Glenn M. Schwartz and Steven E. Falconer, pp. 10-18.
- Tainter, Joseph. 1988. *The Collapse of Complex Societies*. New Studies in Archaeology. Cambridge University Press, Cambridge.
- Tainter, Joseph. 2006. Archaeology of Overshoot and Collapse. *Annual Review of Anthropology* 35: 59-74.
- Tung, Tiffany. 2008. Dismembering Bodies for Display: A Bioarchaeological Study of Trophy Heads from the Wari Site of Conchopata, Peru. *American Journal of Physical Anthropology* 136: 294-308.
- Underhill, Anne. 2002. *Craft Production and Social Change in Northern China*. Kluwer/Plenum, New York.
- Vranich, Alexi. 2009. The Development of the Ritual Core of Tiwanaku. In *Tiwanaku: Papers from the 2005 Mayer Center Symposium at the Denver Art Museum*, edited by Margaret Young-Sanchez, pp. 11-34. Denver Art Museum, Denver.
- Williams, Patrick Ryan. 2002. Rethinking Disaster-Induced Collapse in the Demise of the Andean Highland States: Wari and Tiwanaku, *World Archaeology* 33(3) 361-374.
- Williams, Patrick Ryan, Johny Isla, and Donna Nash. 2001. Cerro Baul: Un Enclave Wari en Interacción con Tiwanaku. *Boletín de Arqueología PUCP* 5:69-88.
- Williams, Patrick Ryan, and Donna Nash. 2002. Imperial Interaction in the Andes: Wari and Tiwanaku at Cerro Baul. In *Andean Archaeology I*, edited by William Isbell and Helaine Silverman, pp. 243-266. Plenum, New York.
- Williams, Patrick Ryan, and Donna Nash. 2006. Sighting the Apu: A GIS Analysis of Wari Imperialism and the Worship of Mountain Peaks. *World Archaeology* 14:455-468.
- Williams, Patrick Ryan, and Donna Nash. 2016. Religious Ritual and Wari State Expansion. In *Ritual and Archaic States*, edited by Joanne Murphy, pp. 131-156. University Press of Florida, Gainesville.

Yoffee, Norman, and George K. Cowgill, eds. 1988. *The Collapse of Ancient States and Civilizations*. University of Arizona Press, Tuscan.