

DISTANT COLONIES AND EXPLOSIVE COLLAPSE: THE TWO STAGES OF THE TIWANAKU DIASPORA IN THE OSMORE DRAINAGE

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The geographic expansion of Tiwanaku people and culture (cal A.D. 500-1150) in the south-central Andes can be viewed as a two-staged diaspora. This article defines and categorizes diasporas, suggests archaeological correlates and theoretical implications, and reconstructs the Tiwanaku diaspora. The first stage was a colonizing diaspora in the context of the functioning Tiwanaku state, limited to a few mid-elevation places such as the middle Osmore drainage near Moquegua and probably Cochabamba. The second stage was a much more extensive victim/refugee diaspora driven by the violent disintegration of the colonies around A.D. 1000, in conjunction with either the collapse of Tiwanaku or its radical reorientation by a militaristic elite. Second-stage diaspora populations that settled in sparsely populated areas such as the upper Osmore drainage or the Carumas-Calacoa region established dispersed, small, defensible villages. Those that settled among a larger or more established host population such as the Chiribaya in the coastal Osmore Valley integrated as a marked, lower-status minority. This explosive collapse suggests that Tiwanaku was composed of multiple groups whose differing interests could not be contained. Supporting evidence is drawn primarily from the Osmore drainage, especially the coastal segment.

Se puede ver la extensión geográfica de la gente y cultura Tiwanaku (500-1150 d.C.) en los Andes sur-centrales como una diáspora de dos etapas. Este artículo define y clasifica diásporas, sugiere correlativos arqueológicos y consecuencias teóricas, y reconstruye la diáspora Tiwanakota. La primera etapa fue una diáspora colonizadora, en el contexto del estado Tiwanaku en marcha. Esta fue limitada a unos sitios de altura intermedia, como la cuenca media del Osmore cerca a Moquegua, y probablemente Cochabamba. La segunda etapa fue una diáspora mucho más extensa, del tipo víctima/refugiado. Fue impulsada por la desintegración violenta de las colonias alrededor de 1000 d.C., contemporáneo con el colapso de Tiwanaku o su reorientación radical por un élite militar. Poblaciones de la segunda etapa que se asentaron en áreas poco pobladas, como la cuenca superior del Osmore o la región de Carumas-Calacoa, establecieron aldeas pequeñas, dispersas, y defendibles. Los que se asentaron entre una población mayor o mejor establecida, como los Chiribaya en el Osmore costero, integraron como una minoría marcada, de menor estatus. Este colapso explosivo sugiere que Tiwanaku era compuesto de grupos múltiples cuyos intereses diversos no podían ser contenidos. Datos en apoyo provienen principalmente de la cuenca Osmore, especialmente el Osmore costero.

Like other archaic states, the Andean polity centered at Tiwanaku was impressive not only because of its monumental, urban capital but also because of the wide distribution of its style of ceramics, textiles, and other material culture. From roughly A.D. 500 through 1000, Tiwanaku's influence expanded from the southern shore of Lake Titicaca to settlements across the altiplano, enclaves near Cochabamba on the eastern slopes of the Andes, trading contacts as far south as San Pedro de Atacama, and colonies in the Moquegua Valley of the Pacific slope, suggesting a society of considerable scale and complexity (Figure 1; Kolata 1993; Moseley 2001; Stanish 2002).¹

I suggest that this geographic coverage was caused in large part by the physical resettling of populations and that the rich literature on modern and historical diasporas offers a useful framework for understanding these dispersed populations and their relationships with their homeland and the people they encountered.

I further argue that the broad distribution of Tiwanaku-related artifacts outside the altiplano resulted from a two-staged diaspora. The first stage occurred in the context of the functioning Tiwanaku polity. Limited to a few locations, it was at least in part an "imperial/colonizing" diaspora, in a typology proposed by Cohen (1997:x-xii, 178-184).

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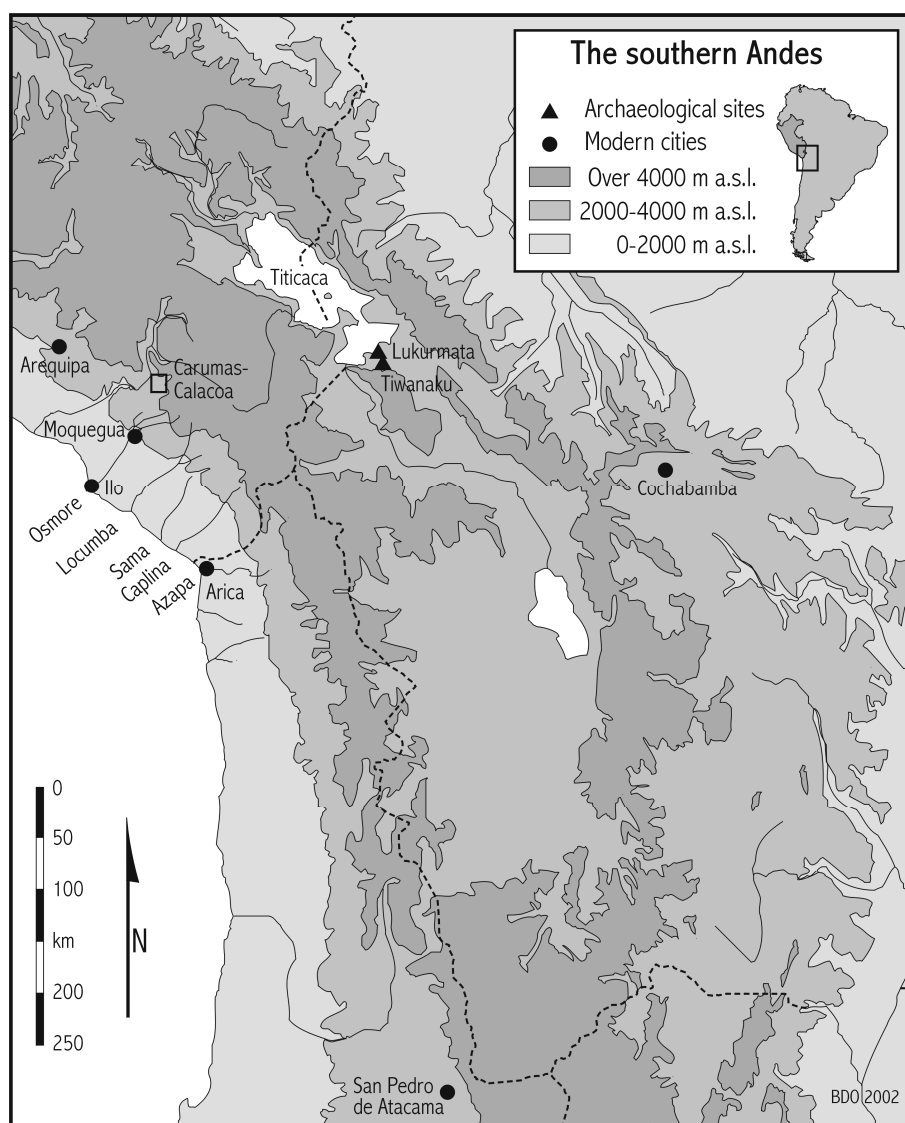


Figure 1. The southern Andes.

The second stage was a more extensive “re-diasporization” (Clifford 1994:305) of many of these colonists and perhaps additional migrants from the homeland, in a “victim/refugee” diaspora associated with Tiwanaku’s collapse. This interpretation provides insights into the expansion of Tiwanaku and its traumatic end.

I make these claims from the vantage point of the Osmore (Moquegua) Valley of southern Peru, especially its coastal segment, near Ilo. Additional data from the upper Osmore drainage, the Carumas-Calacua region to its north, Arequipa, the Caplina Valley of southern Peru, and the Azapa

Valley of northern Chile suggest that these interpretations may apply broadly in the southern Andes.

Diasporas

Diaspora is a contested term with multiple meanings. Building on an influential early definition (Safran 1991:83-84), Cohen suggested an expanded list of common features:

1. Dispersal from an original homeland, often traumatically, to two or more foreign regions;

2. alternatively, the expansion from a homeland in search of work, in pursuit of trade or to further colonial ambitions;

3. a collective memory and myth about the homeland, including its location, history and achievements;

4. an idealization of the putative ancestral home and a collective commitment to its maintenance, restoration, safety and prosperity, even to its creation;

5. the development of a return movement that gains collective approbation;

6. a strong ethnic group consciousness sustained over a long time and based on a sense of distinctiveness, a common history and the belief in a common fate;

7. a troubled relationship with host societies, suggesting a lack of acceptance at the least or the possibility that another calamity might befall the group;

8. a sense of empathy and solidarity with co-ethnic members in other countries of settlement; and

9. the possibility of a distinctive creative, enriching life in host countries with a tolerance for pluralism. [1997:26]

Diasporas are highly variable, and most involve only some of these features. Points 1, 3, and 6 seem mandatory. All diasporic communities live outside their putative homeland (Cohen 1997:ix) and have dispersed from a single origin to multiple destinations (Cohen 1997:22; Palmer 2000). Memory of this homeland is always present to some degree, "a notion often buried deep in language, religion, custom or folklore [that] always has some claim on their loyalty and emotions" (Cohen 1997:ix). Also necessary is "an acceptance of an inescapable link with their past migration history and a sense of co-ethnicity with others of a similar background" (Cohen 1997:ix).

Cohen's definition balances Safran's insistence on a real or imagined common homeland (Clifford 1994:304-306; Cohen 1997:23; Safran 1991:83-84) with a broadened emphasis on "diaspora consciousness" or "ethnocommunal consciousness" (Safran 1991:84-85), the solidarity based not only on the shared homeland but also on shared diasporic experiences. Gordon and Anderson (1999:288) gloss this distinction as a contrast between

"roots," or loyalties to a real or imagined shared homeland, and "routes," or the real or imagined solidarity among people and groups that have shared experiences of dispersal and minority or "stranger" status. I gloss this as a contrast of centripetal ties, both material and imagined, between a diaspora community and the homeland, with lateral ties, both realized and imagined, among individuals and diaspora communities based on commonalities of history, experience, and interests.

This contrast may be useful for understanding broadly distributed cultural markers such as Tiwanaku ceramics. The predominant processes or motivations behind widespread traits might involve centripetal ties with a heartland, as in the case of far-flung outposts of the Inka state or a "vertical archipelago" (Murra 1975) of Tiwanaku settlement in the first-stage diaspora. Alternatively, they might involve lateral solidarity that is more imagined than material, resulting from a common history and experiences shared by multiple diasporic groups, as in the second-stage diaspora. We can ask to what extent similarities among peripheral communities reflected centripetal relations versus lateral relations. We can also ask to what extent these relations were material (communication, exchange, intermarriage, migration) versus imagined (common ideology, coethnicity, shared history).

Cohen (1997:24-26) argues that because diasporas involve a shared ethnic identity that persists over time, and because the distinctive ethnicity of a minority will fade without active maintenance, diasporas imply real interactions among communities. Cohen's is one position along a continuum of conceptions of ethnicity that range from situational to primordial. Those who see ethnicity as situational and constructed for particular ends (Barth 1969; Rex 1995; Roosens 1989) will, like Cohen, explain geographically widespread material culture as responses to particular circumstances. Those who conceptualize ethnicity as a primordial quality that is acquired in childhood and maintained for psychological and social reasons (Geertz 1963; Nash 1989:4-5) will feel that widespread material culture need not imply continuing relationships, because ethnicity and its material indexes simply tend to persist. Rather than choosing a position along this continuum *a priori*, we may investigate to what extent the shared ethnic identity of particular scattered communities was constructed in the context

of relations among groups (lateral or centripetal, material or imagined), as opposed to being primordial, because of independent processes of maintenance or the slowness of change. We may also ask why the interests of these communities were served by maintaining a common ethnic identity, whether independently or through continuing relationships.

Cohen divides diasporas into five types, based on the historical processes that shaped them: "victim/refugee; imperial/colonial; labour/service; trade/business/professional; cultural/hybrid/post-modern" (1997:178-184, see also x-xii). The fifth type is probably not relevant to prehistoric cases. Few diasporas fit neatly into just one category. To summarize Cohen's typology, victim diasporas result from traumas such as war, natural disaster, or persecution, as in the cases of the African slave trade, the potato famine in Ireland, and the Jewish diaspora. Imperial/colonial diasporas result from colonization for the economic, military, or political purposes of states, as in the cases of the British Empire or the Archaic Greek colonization of Anatolia. Labor/service diasporas arise from labor demands, as with indentured Indian laborers in the British Empire or North Africans in France. Finally, trade diasporas are dispersals of people equipped to profit from economic exchange across cultural and geographic boundaries, often without active involvement of a state. Examples include Chinese traders throughout southeast Asia, the Lebanese in West Africa, and, as argued by Stein (1999), Uruk traders in the northern periphery of Mesopotamia.

Categorizing prehistoric population movements as types of diasporas provides useful starting points for functional and processual explanations, as Stein's (1999) Uruk study demonstrates. The diaspora literature suggests packages of co-occurring phenomena based on well-documented cases. If an archaeological case fits parts of a package, then it may be useful to consider the remaining parts. In the case of a good fit, the analogy may embolden the archaeologist to suggest additional aspects that cannot be recovered from the material record, in particular the ideological and psychological features of diasporic populations that may explain other behavior. In the case of a partial fit, the discrepancies may highlight important aspects of the archaeological case. Diaspora analogies prompt analysis of the relationships of the diasporic communities with their host populations. Each type of

diaspora suggests additional questions. In the case of a trade diaspora, we might investigate what conditions facilitated this form of exchange and social relations and why its participants were suited to their role. For a colonial diaspora, we might ask why the distant enclaves were established and how they functioned. Identifying a victim diaspora foregrounds inquiry into the traumatic events that caused it.

Unlike functional but generally ahistorical analyses based on Murra's (1975) vertical archipelago model or other human ecology approaches, the diaspora concept is inherently historical. A diaspora is not only a situation of settlement pattern and social relations, a "diaspora condition" (Safran 1991:88) that may be evaluated from a synchronic, functional point of view. It is also an event that occurred at a particular moment and played itself out over time. Identifying diasporas in prehistory implies identifying population movements and social changes that are subject to particular explanations. These explanations may prove as fundamental to prehistory as the Jewish diaspora and the African slave trade are to history.

While the concept of diasporas pervades historical archaeology, particularly the study of the African diaspora (Gordon and Anderson 1999; Orser 1998), it has not been widely applied to prehistory (for exceptions, see Goldstein 2000a:203; Owen 1999a; Stein 1999). Interest in the diaspora literature may have been limited in part because of the political content of current diaspora discourse (Gordon and Anderson 1999:285) and because most diaspora research focuses on modern nation-states of the last 500 years (Clifford 1994; Cohen 1997).

Archaeological Correlates of Diasporas

The core features of diasporas should be recognizable in the archaeological record (Table 1). First is "dispersal from an original homeland, often traumatically, to two or more foreign regions" (Cohen 1997:26). Such a dispersal is suggested when a material culture that developed from recognizable precursors in one region abruptly appears in permanent settlements in two or more other regions, without local antecedents. A similar archaeological signature could be produced by the exchange of goods from a source region or the emulation of one region's style by surrounding populations. In

Table 1. Some Archaeological Correlates of Diasporas. The First Three are Mandatory, While the Fourth is Common but not Universal.

Theoretical feature of diaspora	Material expression of that feature	Specific evidence
A population dispersed from a core to a wider area	Material culture of the homeland is found in two or more peripheral regions.	The material culture is part of a long-term sequence with clear precursors in the homeland; it developed in the homeland. It has no antecedents in the periphery; it was abruptly introduced in the periphery. It is found at long-term or permanent settlements. It comprises a complete range of material culture, including both communicative realms and realms of habitus.
	Bioarchaeological evidence shows that users of the intrusive material culture were immigrants from the homeland or descendents of immigrants.	Biological relatedness studies show that users of the intrusive material culture were more closely related to the homeland population than to indigenous peripheral populations. Chemical or isotopic studies show that some individual users of the intrusive material culture were raised in the homeland and later moved to the peripheral settlements.
The dispersed population has collective memory and myth about the homeland.	Iconography and/or ritual practices that referred to the homeland persisted for a long period.	The intrusive material culture spanned a period of multiple generations with only minor changes. This evidence is strongest if the iconography depicts referents found in the homeland but not in the periphery, that is, features maintained in the absence of local reinforcement.
	Continued relations with the homeland maintained the memory and myth of it (in imperial/colonial diasporas or trade diasporas, maybe in labor/service diasporas, but probably not in victim/refugee diasporas).	Trade goods from the homeland, evidence of production for long-distance exchange with the homeland, etc. that indicate continuing economic relations between the dispersed population and the homeland
The dispersed population has ethnic group consciousness based on shared history.	The peripheral populations maintained a visible, identity-marking material culture in contrast to surrounding groups.	The intrusive material culture is distinctive from that of neighboring populations. Its distinctiveness persists for a significant period or is even accentuated over time.
	This material culture was shared by multiple dispersed populations that had similar origins and histories.	The same or very similar intrusive material culture is shared by multiple peripheral populations. These multiple peripheral populations share similar histories of population movement, economic and political relations with other groups, ecological circumstances, etc.
The dispersed population has a troubled relationship with its host society.	The dispersed population has poorer access to resources and/or lower status than the host society.	Dwelling sites, midden, burials, skeletal traits, etc. suggest more limited access to resources, wealth, and/or status.
	The dispersed population is threatened by the host society.	Defensible sites, weapons, paleopathology, etc. suggest actual or threatened conflict.

order to suggest a movement of people, the dispersed material culture should encompass numerous aspects and include style not only in the communicative realm, such as clothing and decorated ceramics (Wobst 1977), but also in realms of habitus that were presumably less consciously or easily manipulated (Bourdieu 1977; Burmeister 2000; Hodder 1979, 1982; Sackett 1982), such as domestic social relations reflected in house plans or temper preferred for ceramic production. If not only the ceramic style but also textiles, house types, burial practices, technological styles (Lechtman 1977), and other features from one region all appeared elsewhere without antecedents, then it is reasonable to infer immigration. Bioarchaeological data can provide confirmation.

The second key feature is "collective memory and myth about the homeland, including its location, history and achievements" (Cohen 1997:26). The persistence of iconography or ritual practices of the homeland may reflect such a memory, especially if the symbols lack local referents. In colonial diasporas, ongoing interaction with the homeland maintains collective consciousness and memory of it. Where there is evidence of such relations, the memory and myth can be inferred.

The third essential feature is "strong ethnic group consciousness sustained over a long time and based on a sense of distinctiveness, a common history and the belief in a common fate" (Cohen 1997:26). Such consciousness may be suggested by shared material culture, especially if it was used to emphasize community distinctiveness through boundary marking (Barth 1969; Hodder 1979, 1982). If a subset of a region's population maintained a distinctive style of identity-signaling features such as clothing and ceramic decoration (Wobst 1977) for a generation or more, then it is reasonable to infer the expression of a group consciousness. If several groups with similar boundary-marking elements shared similar historical experiences, then their common consciousness could have been based on their common history.

Archaeological correlates of the other features of Cohen's (1997:26) list (Points 2, 4-5, 7-9) may corroborate the identification of a diaspora, but they are not essential. For example, intrusive settlements in defensible locations would imply Cohen's "troubled relationship with host societies." Identifying

a diaspora would suggest that these other correlates might be worth pursuing.

Tiwanaku and the Osmore Drainage

From Tiwanaku, the Osmore was among the most accessible valleys on the western slopes of the Andes. These valleys produce crops that grow poorly or not at all in the altiplano and would have been particularly useful in the Tiwanaku political economy: maize to make *chicha* beer for ceremonial feasting, coca for both daily medicinal consumption and ritual necessity, and dried *ají* peppers as a high-value, easily transportable condiment. Some 275 km by trail from Tiwanaku, Moquegua's resources required capital to exploit but would have been relatively easy to monopolize as exports.

The Osmore drainage has four distinct sections (Figure 2; Rice 1989). The upper section comprises several steep, narrow, tributary valleys with occasional irrigable slopes. These descend from high puna grasslands to about 1,600 m a.s.l., some 5 km upstream from the modern city of Moquegua. This upper section was essentially vacant until the Middle Horizon (A.D. 500-1000), when Wari occupied a compact cluster of sites focused on Cerro Baúl and Tiwanaku people established at least two small settlements at its foot (Lumbreras et al. 1982; Moseley et al. 1991; Owen 1994, 1996, 1999b; Owen and Goldstein 2001; Williams 1997, 2001).

The middle valley has the largest concentration of farmland. It extends about 26 km from around 1,600 m a.s.l., above Moquegua, to about 900 m a.s.l., where the valley pinches off into a dry, rocky gorge. It was home to the indigenous Huaracane culture from at least 385 B.C. (Feldman 1989; Goldstein 1989a, 2000b). People using Tiwanaku-style goods lived in the middle valley as early as A.D. 550 or 700 (Goldstein and Owen 2001). By Tiwanaku V (roughly A.D. 800-1000), a large Tiwanaku population had an impressive temple at Omo; a lesser one at La Cantera; and small-scale ritual structures, nondomestic storage facilities, and immense cemeteries at Chen Chen, adjacent to extensive fields reclaimed from the surrounding desert using long canals (García 1990; Goldstein 1989a, 1989b, 1993c; Goldstein and Owen 2001; Ortloff and Kolata 1993; Owen 1997; Vargas 1988; Williams 1997, 2002). The clustered distribution of Tiwanaku settlements and a few Wari sherds on

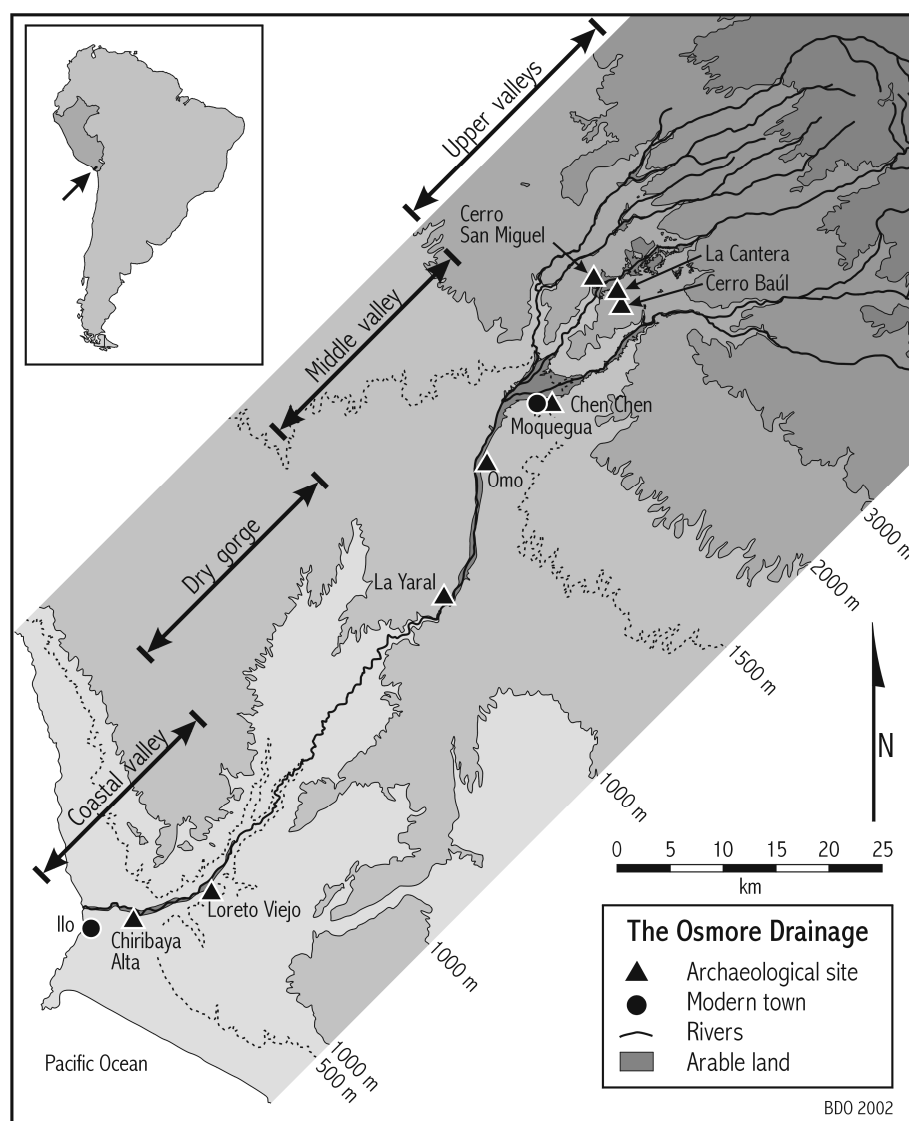


Figure 2. The four segments of the Osmore drainage.

some Huaracane sites suggest that Tiwanaku and Wari shared the valley with indigenous Huaracane people for at least part of the Middle Horizon.

A 31-km-long dry gorge partially isolated the middle valley from the coastal valley, where surface water and patches of farmland reappear. The coastal valley is about 25 km long, descending from about 325 m a.s.l. to the sea. It is deep, and the floor averages only 115 m across in the upper 10 km. The last 15 km widen to around 300 m, reaching the sea near the modern port of Ilo. Prior to the 1995 completion of the Pasto Grande canal, water flowed in the coastal Osmore (Ilo) River for only a few days

or weeks each year. The land outside the valley bottom is barren desert, except for patches of desiccated lomas fog vegetation. Abundant archaeological remains suggest that the river flowed year-round during some periods. The coastal Osmore Valley was initially occupied by indigenous agriculturalists similar to the Huaracane who are represented by the Algodonal Early Ceramic culture (Owen 1993a, 1993b). Later inhabitants included the Chiribaya and Ilo-Tumilaca/Cabuza cultures (Figure 3; Bawden 1989a; Belan 1981; Buikstra 1995; Ghersi 1956; Jessup 1990a, 1990b, 1991; Owen 1993a, 1993b; Santos 1983).

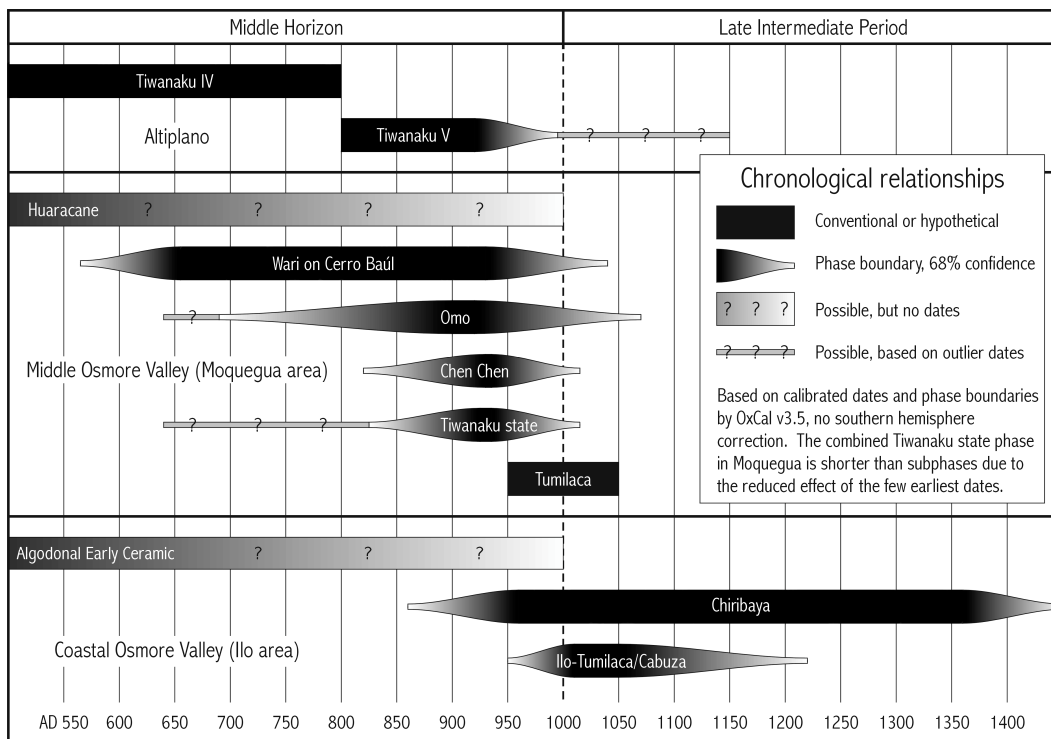


Figure 3. Summary of chronological relationships, based on phase boundaries calculated by OxCal v.3.5 from the radiocarbon dates discussed throughout this paper.

Tiwanaku on the Pacific Watershed

Artifacts that reflect Tiwanaku influence ("Tiwanaku related") are widespread on the Pacific slopes of the Andes. Goldstein (1989a, 1989b, 1993b, 1993c) has shown that those near Moquegua represented a substantial intrusive occupation linked to the Tiwanaku state. He also confirmed that a small number of high-status people connected to Tiwanaku lived in the middle Azapa Valley in northern Chile, analogous to Moquegua geographically but not in scale or colonial organization (Goldstein 1996).

Assessments of the remaining Tiwanaku-related material in the western periphery have often implied state presence all the way to the Pacific shore. Maps in works by Bruhns (1994:240) and Ponce (1981:153) show Tiwanaku sites on the coastline, and maps in works by Mujica et al. (1983:89) and Mujica (1985:109) identify shoreline Tiwanaku colonies from Ilo to Arica. Berenguer and Dauelsberg (1989:177) discuss altiplano colonists on the coast who provided Tiwanaku with marine products. Many authors specify the coastal Osmore Valley,

especially Loreto Viejo. For example, Bermann et al. (1989:272) mention Tiwanaku V material at Loreto Viejo, and Browman (1978:337), citing Ravines (1969), uses Loreto Viejo and Ilo as examples of Tiwanaku V *mitmaquna* settlements. Mujica et al. (1983:90) considers Loreto Viejo a Tiwanaku site. Kolata (1983:264), Ortloff and Kolata (1993:197), Binford and Kolata (1996:51), and Kolata and Ortloff (1996:197) all list Loreto Viejo as a Tiwanaku V site. Lumbreras (1973:26-27, 1974:77-78) considered the Loreto Viejo ceramic style to be distinct from that of Tiwanaku itself but nevertheless included in Classic or Expansive Tiwanaku. Muñoz (1981:24) saw the Loreto Viejo style as evidence of groups who immigrated from the altiplano, whereas Rivera suggested that "Loreto Viejo was the ruling Tiwanaku group in the low valleys" (1991:29-30). Covey (2000:124) cites Tiwanaku V ceramics and other altiplano influence at Loreto Viejo as indicating either colonization or elite exchange.

In part because of the work reported here and earlier (Owen 1993b), this view of Tiwanaku

extending to the sea is fading from more recent syntheses, which tend, like the work of Kolata (1993:244,250-269) and Moseley (1992:224-228), to focus on the well-established middle-elevation case of Moquegua without taking a stand on the coastal evidence. Stanish (2002:182-183) and Moseley (2001:242) do note, however, that Tiwanaku settlement did not reach the coast.

Early Approximations and a Key Refinement

Most Tiwanaku-related evidence on the coast comes from just two valleys: the coastal Osmore Valley in far southern Peru (Browman 1978; Disselhof 1967; Kolata 1983; Lumbreras 1974; Moseley 2001; Mujica 1985; Mujica et al. 1983; Muñoz 1981; Nuñez 1973; Ponce 1981) and the Azapa Valley in northernmost Chile (Berenguer 1978; Berenguer and Dauelsberg 1989; Berenguer et al. 1980; Dauelsberg 1973a, 1973b, 1985; Focacci 1981; Mujica 1985; Nuñez 1965; Santoro 1980a). Related ceramics have been reported from the intervening but little studied Caplina, Sama, and Locumba valleys (Trimborn 1975; Uhle 1922; Vela 1996).

The notion that Tiwanaku occupied these valleys (Latcham 1938; Uhle 1922) arose before the Tiwanaku style was well defined. It was updated around 1960, when Gary Vescelius, Maximo Neira, and others collected Tiwanaku-related ceramics from a cemetery they called Loreto Viejo. Vescelius and Hans Disselhof revisited the cemetery in 1965 and collected samples for three widely cited radiocarbon dates (Dauelsberg 1960a, 1960b, 1973a, 1973b; Disselhof 1967, 1968; Geyh 1967; Mujica et al. 1983). Tiwanaku-related coastal ceramics began to be called “Loreto Viejo style” (Berenguer and Dauelsberg 1989; Focacci 1981; Goldstein 1996; Lumbreras 1974; Muñoz 1981; Rivera 1980; Santoro and Ulloa 1985).

Twenty-five years after Vescelius’s fieldwork, Paul Goldstein (1985, 1989a, 1989b) developed a ceramic chronology for the Middle Horizon in the middle valley, distinguishing three Tiwanaku-related ceramic assemblages from separate sites. He called the styles Omo, Chen Chen, and Tumilaca and argued that they represented sequential periods. The Omo style includes red-slipped finewares with frequent polychrome designs and burnished blackware, which Goldstein considered contemporary with altiplano Tiwanaku IV. The Chen Chen

style is easily distinguished by its different red-slipped wares and lack of blackware. Goldstein considered it a local expression of Tiwanaku V. The Tumilaca style is similar to the Chen Chen style, with a partially overlapping suite of motifs and forms, generally poorer finish, more careless painting, and fewer polychromes. Tumilaca ceramics differ more from their altiplano parallels than do the others, and assemblages vary more from site to site.

The Tumilaca style is more widely distributed in the middle and upper Osmore Valley (Bermann et al. 1989; Goldstein and Owen 2001; Owen 1996; Stanish 1992) and is the only one of the three in the coastal valley (Owen 1993b). Unlike sites with Omo or Chen Chen ceramics, Tumilaca sites are often protected by walls, located in defensible places, or both. Goldstein (1989a, 1989b) and Bermann et al. (1989) argued that the Tumilaca style was produced by descendants of people who made Chen Chen ceramics, after they scattered into competing settlements when the Tiwanaku state broke down in Moquegua around A.D. 950-1000. The work presented here confirms that model.

Subsequent work (Goldstein 1993a; Goldstein and Owen 2001; Owen 2001; Owen and Goldstein 2001) has borne out the distinctions among the three styles but revised their chronological relationships (Figure 3). Although the Omo style apparently appeared earlier in Moquegua, it continued alongside the Chen Chen style until about A.D. 1000 (Owen 2001; Owen and Goldstein 2001). The Tumilaca style was indeed later, at least in the coastal valley. Its distinction from the Chen Chen style was crucial. Without this typological resolution and chronological control to separate Tiwanaku V from post-Tiwanaku ceramics, earlier studies generally treated all Tiwanaku-related artifacts as indicators of people connected to the Tiwanaku state.

Testing for Tiwanaku on the Coast

To investigate what appeared to be a Tiwanaku exploitation of the Pacific coast, the Proyecto Colonias Costeras de Tiwanaku (PCCT) systematically surveyed the margins of the coastal Osmore Valley and excavated domestic and mortuary sectors of three sites (Owen 1993b). The misnamed project found no Tiwanaku IV or V settlements. Instead,

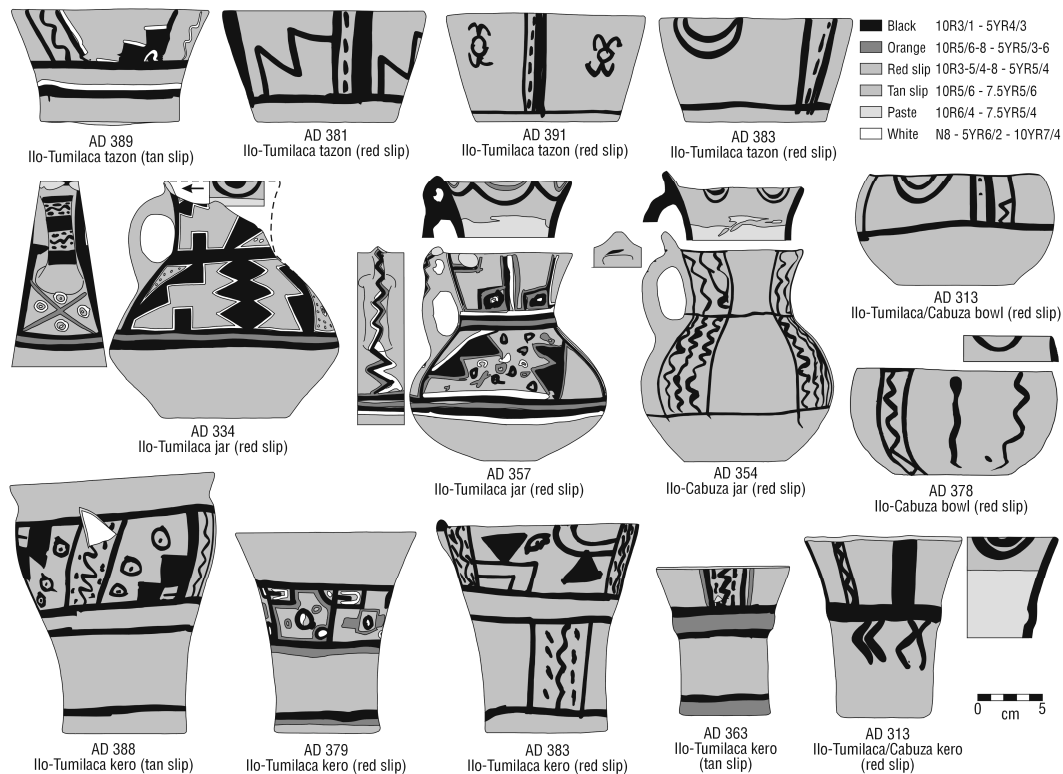


Figure 4. Ilo-Tumilaca/Cabuza ceramics. AD numbers refer to burials at El Algodonal, some with two vessels.

the Tiwanaku-related sites all had ceramics similar to the postcollapse Tumilaca style.

These coastal ceramics fall along a continuum from those that match the middle valley Tumilaca style, which I call Ilo-Tumilaca, to ceramics very like the Cabuza style of the Azapa Valley (Berenguer and Dauelsberg 1989; Dauelsberg 1985; Santoro 1980b; Santoro and Ulloa 1985), which I call Ilo-Cabuza (Figure 4). Ceramics spanning the full Ilo-Tumilaca/Cabuza range are found in otherwise indistinguishable burials intermixed in the cemetery at El Algodonal, as well as in domestic middens (Owen 1993b). Radiocarbon dates suggest that although there may have been a temporal trend from Ilo-Tumilaca toward Ilo-Cabuza, both styles roughly spanned A.D. 950-1200. Cabuza has been considered much earlier in Chile (Berenguer and Dauelsberg 1989; Santoro and Ulloa 1985), but Cassman (1997:56-70) found that Cabuza and Loreto Viejo styles were mixed there as well and that radiocarbon dates placed both "slightly before A.D. 1000 to slightly after A.D. 1300" (1997:62).

Survey Evidence

The PCCT survey (Owen 1993b) covered about 13 km² along the valley margins but did not include the naturally reworked and farmed floodplain or areas near the mouth of the river covered by recent urban expansion. Exploration of several side drainages, ridgelines, and hilltops indicated that virtually all prehistoric occupation was in the valley margin survey area and in a band paralleling the coastline. Because no Tiwanaku-related sites are known from the nearby coastal strip, it is not considered here. Surface ceramic densities were often very low, and cultural affiliations were based on as few as one to a dozen diagnostic sherds, depending on site size.

The survey located 123 prehistoric habitation sites and 35 cemeteries scattered along the whole coastal valley. Twenty-four sites had definite Ilo-Tumilaca/Cabuza ceramics, and 16 others had sherds probably of that style (Figure 5). The 11 definite Ilo-Tumilaca/Cabuza residential sites totaled 27 ha, with a median size of 1.4 ha. Because these

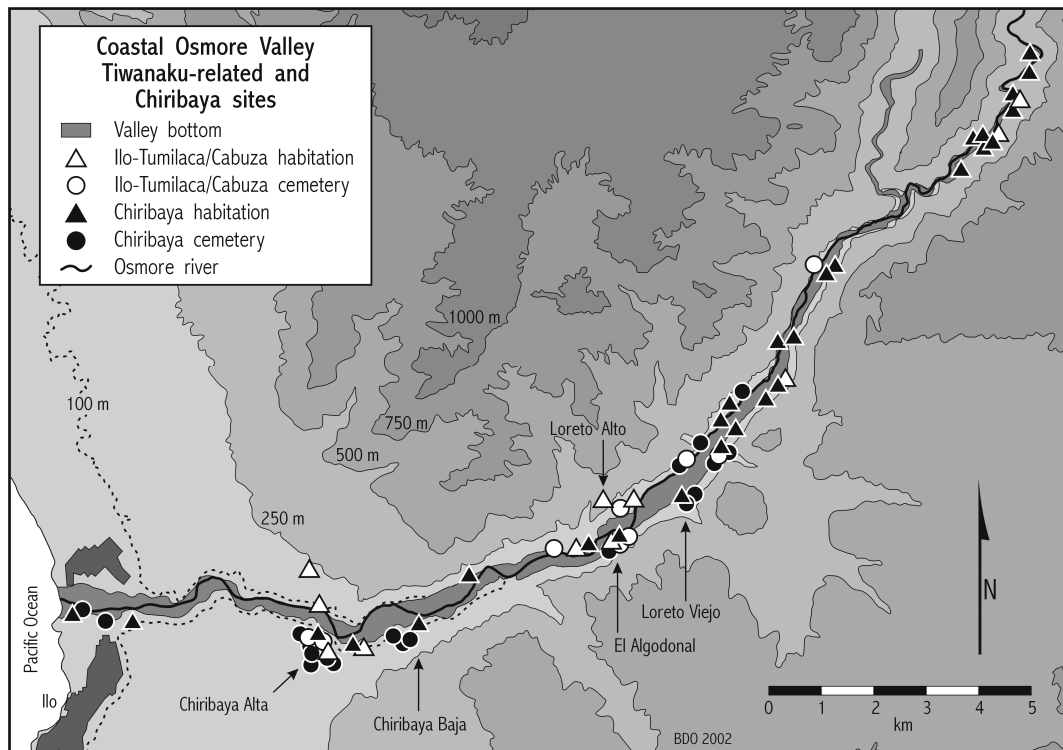


Figure 5. Tiwanaku-related sites and Chiribaya sites in the coastal Osmore valley. Multicomponent sites are shown as adjacent symbols. Many sites with probable, but not definite, cultural affiliation are not shown.

figures include some large multicomponent sites that were predominantly Chiribaya, they probably exaggerate the total area. The single-component Ilo-Tumilaca/Cabuza cemetery at El Algodonal probably served a hamlet of around 45 people and almost certainly fewer than 100 (Owen 1993b). Two other single-component Ilo-Tumilaca/Cabuza cemeteries were four and 13 times larger, and some mixed cemeteries were larger yet. Nevertheless, the total Ilo-Tumilaca/Cabuza population probably did not exceed several thousand and could have been much less.

The survey also identified 57 definite and 14 probable Chiribaya sites, similarly distributed (Figure 5). Chiribaya sites are conspicuous because of their usually large quantities of ceramics with highly diagnostic decorations, colors, finish, and forms (Figure 6). Many other characteristics, including textiles, tomb forms, domestic architecture, and even the density of midden and its marine shell assemblage, are different from Ilo-Tumilaca/Cabuza sites, suggesting that Chiribaya sites were occupied by a separate group. The 28

definite Chiribaya residential sites totaled 57 ha. Many were tiny, with a median size of only 0.6 ha. However, the four largest Chiribaya residential sites, at 5.5 to 20.1 ha, dwarfed every Ilo-Tumilaca/Cabuza village. The peak Chiribaya population was probably several times that of the Ilo-Tumilaca/Cabuza group, and the many tiny Chiribaya sites may reflect the filling of the smallest habitable spaces as the largest sites swelled to enormous size for such a small valley. There is some debate about when the Chiribaya style first appeared in the coastal Osmore (Lozada 1998; Owen 1993b), but radiocarbon dates summarized in Figure 3 and detailed in Figures 7b and 8 suggest that it slightly preceded and was present throughout the Ilo-Tumilaca/Cabuza occupation.

Many sites have sufficient quantities of both ceramic styles to suggest that they were occupied by users of both, either concurrently or sequentially. Two-thirds of the settlements with Ilo-Tumilaca/Cabuza ceramics also had Chiribaya material, and one-third of the settlements with Chiribaya ceramics also had Ilo-Tumilaca/Cabuza

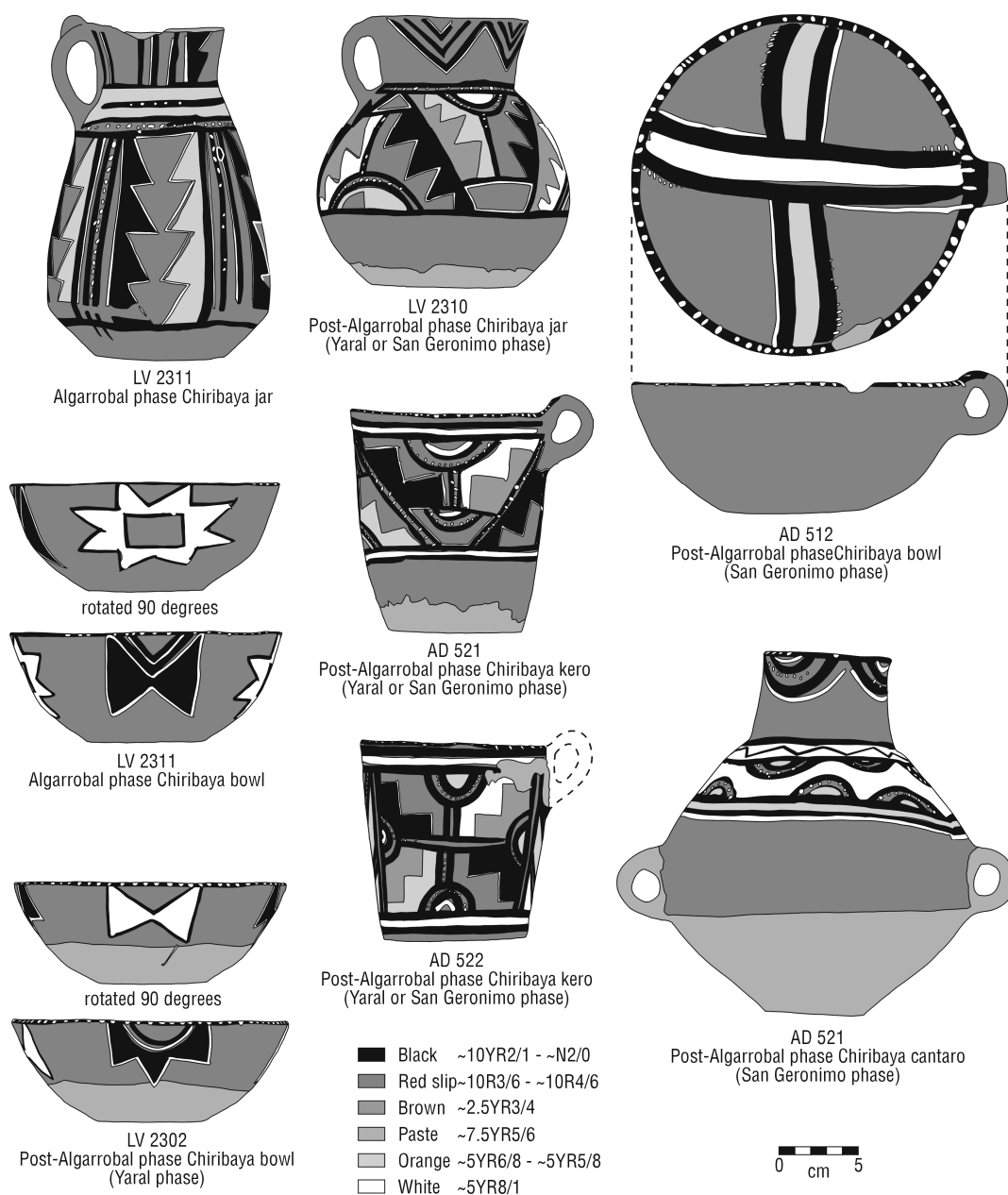
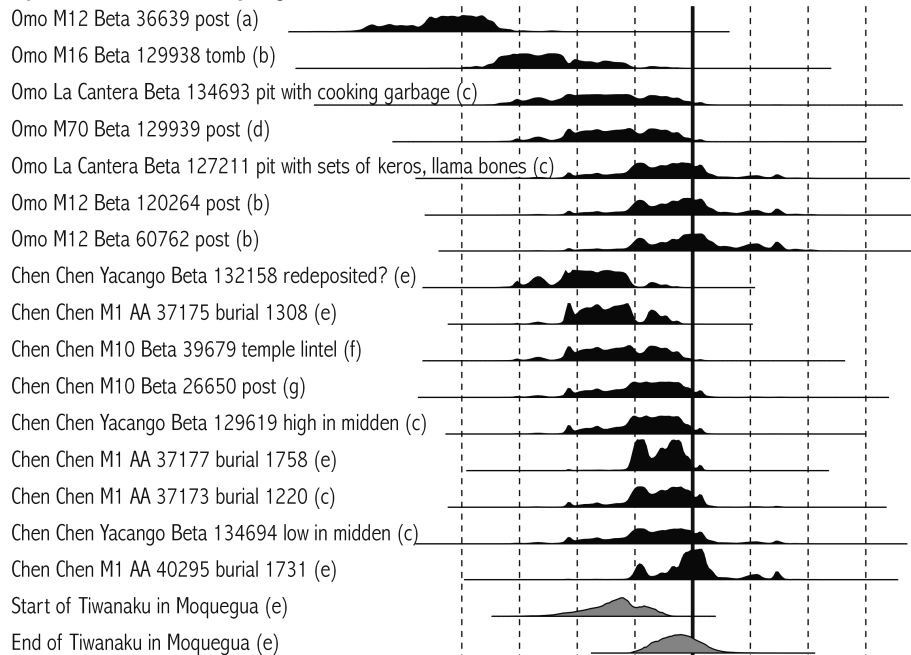


Figure 6. Chiribaya ceramics. AD and LV numbers refer to burials at El Algodonal and Loreto Viejo, respectively.

material. Cemeteries were slightly more segregated, but even so, half of the cemeteries with Ilo-Tumilaca/Cabuza sherds also had Chiribaya pottery, and a quarter of the cemeteries with Chiribaya burials also had Ilo-Tumilaca/Cabuza material. Nevertheless, no burial contained both ceramic styles, and many hundreds have been excavated by various projects. Even single-component sites were

often very close together. Settlements of one type were sometimes adjacent to cemeteries of the other. Only one site in the entire coastal valley, the walled center of Chiribaya Alta, had defensive constructions, although some other sites were on river terraces with cliff-like edges or in steep ravines that were arguably defensible. Overall, people of the Ilo-Tumilaca/Cabuza and Chiribaya traditions apparently

a) Tiwanaku in Moquegua



b) Ilo-Tumilaca/Cabuza in the coastal Osmore

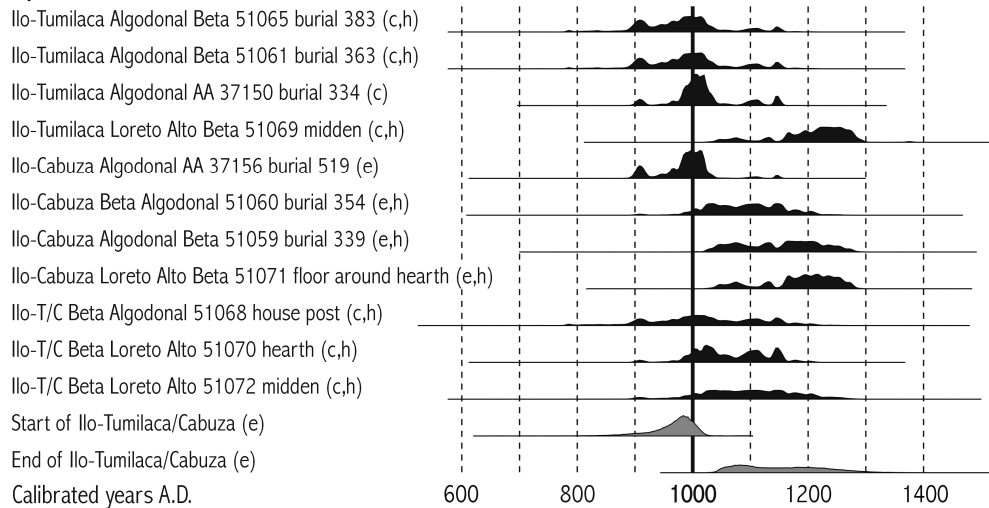


Figure 7. Calibrated radiocarbon dates and calculated phase boundaries of Tiwanaku-related styles in the Osmore drainage. Date distributions and phase boundary estimates plotted by OxCal v3.5. Phase boundaries are based on the dates shown for the given period only, without modelling other phases. The outlying earliest Omo style date is excluded. Sources: (a) Goldstein 1993a:31, (b) Goldstein and Owen 2001:148, (c) Owen and Goldstein 2001:173, (d) Magilligan and Goldstein 2001:433, (e) Table 2, (f) Goldstein 1993a:34, (g) Goldstein 1989a:69, (h) Owen 1993a:407-408.

had a long, intimate, and largely peaceful coexistence. Even so, they remained distinct for at least several generations (Owen 1993b), suggesting the maintenance of an ethnic boundary (Barth 1969; Hodder 1979, 1982).

Surface-Collected and Excavated Evidence

PCCT investigated three potential Tiwanaku settlements, making systematic surface collections and excavating 140 m² in 27 separate habitation

Chiribaya in the coastal Osmore

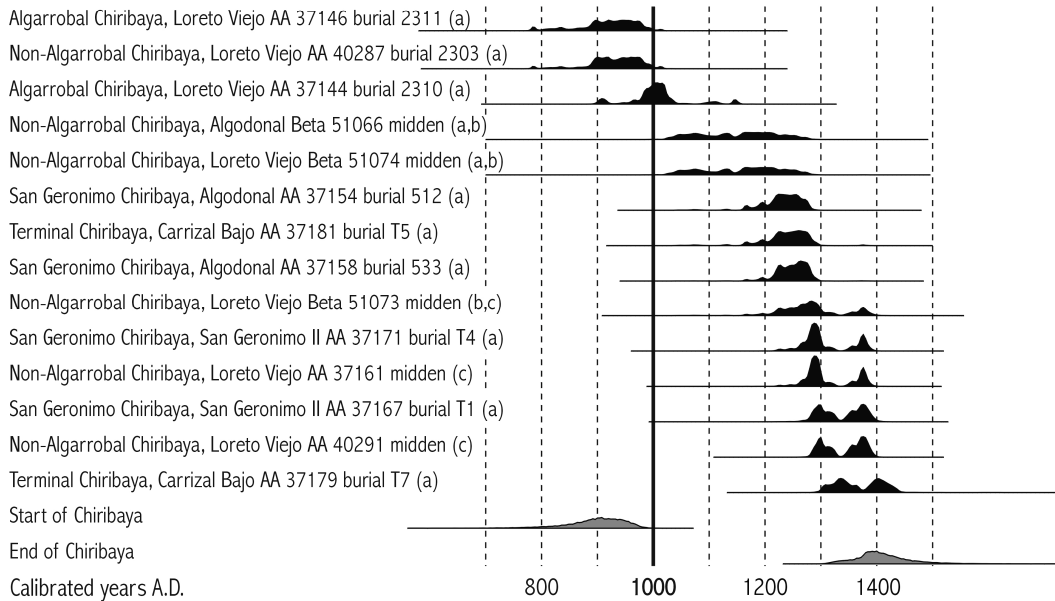


Figure 8. Calibrated radiocarbon dates and calculated phase boundaries of Chiribaya in the coastal Osmore valley. Date distributions and phase boundary estimates plotted by OxCal v3.5. Phase boundaries are based on the dates shown for the given period only, without modelling other phases. Sources: (a) Table 2, (b) Owen 1993a:407-408, (c) Owen 2002:703.

areas and 101 m² in two cemeteries (Owen 1993b). Excavations at El Algodonal sampled a single-component Ilo-Tumilaca/Cabuza cemetery, domestic terraces with both Chiribaya and Ilo-Tumilaca/Cabuza houses and middens, and some much older Algodonal Early Ceramic domestic terraces. Loreto Alto, a complex of 254 small terraces in steep ravines high on the valley wall opposite El Algodonal, proved to be a single-component Ilo-Tumilaca/Cabuza habitation site. Its unusual setting may have served to escape seasonal insect pests.

Work at Loreto Viejo documented Chiribaya habitation areas and cemeteries and Early Ceramic domestic terraces and burial tumuli. Although Loreto Viejo was the most commonly mentioned coastal Tiwanaku site (see above), intense surface inspection and 16 excavation units revealed almost no Tiwanaku-related material there. One probable Ilo-Tumilaca/Cabuza mummy bundle was excavated from an intrusive burial in an Early Ceramic burial mound, and several sherds and a large tapestry fragment were found on the surface of the Early Ceramic domestic area, probably from a looted burial. Elsewhere (Owen 1993b) I have treated this tapestry as one of the few items from the coastal

Osmore that might pertain to the Tiwanaku state, but according to the criteria of Rodman and Fernandez (2000), it is part of a Wari tunic. To the best of my knowledge, this is the only Wari artifact identified in the coastal valley.

Ironically, Vescelius and Disselhof probably did not collect their "Loreto Viejo" material at Loreto Viejo at all but, rather, at the nearby site of El Algodonal. Disselhof's (1968:93-94) description fits El Algodonal better than Loreto Viejo; Vescelius's latitude and longitude of "Loreto Viejo" (Geyh 1967:208) are closer to El Algodonal; and Dr. Maximo Neira, who participated in Vescelius's fieldwork, kindly showed me a photograph of the team working in what is clearly the cemetery at El Algodonal.

Timing in the Osmore Drainage

Radiocarbon dates indicate that Ilo-Tumilaca/Cabuza ceramics appeared in the coastal Osmore about when Tiwanaku centers in Moquegua were abandoned, if not slightly later. The Tiwanaku occupation of Moquegua (Omo and Chen Chen styles) ended around A.D. 1000 or slightly before (Figure 7a). Excluding the earliest, apparently outlying sample and dates collected by Disselhof at Chen

Chen (Geyh 1967) that disagree with the many others from that site, a Bayesian phase analysis of Moquegua dates from numerous residential, mortuary, and ceremonial sites using OxCal v3.5 (Ramsey 1998, 2000) estimates that the Omo and Chen Tiwanaku occupation of Moquegua ended between A.D. 935 and 1015 with 68 percent confidence.

The Tumilaca style in Moquegua is thought to be a little later, but only two dates are available. One is problematic (Goldstein 1989a:212). The other, from the Tumilaca-style village of Cerro San Miguel in the upper Osmore Valley of Torata (Owen 1999b), falls a bit later than the state Tiwanaku dates, around A.D. 980-1040 (Table 2).

Tiwanaku-related material first appeared in the coastal Osmore Valley at a time indistinguishable from when the Tiwanaku colonies in Moquegua were abandoned (Figure 7). Radiocarbon dates cannot tell us whether Tiwanaku-related material culture reached the coastal Osmore during the last decades of the Tiwanaku colonial occupation of Moquegua, precisely at the colonies' abandonment, or up to a few decades later, but the association of the end of state Tiwanaku presence in Moquegua with the beginning of Ilo-Tumilaca/Cabuza in the coastal valley is clear. Finally, the dates in Figure 8 suggest that people had been using Chiribaya ceramics in the coastal valley for perhaps 50 to 100 years before the Ilo-Tumilaca/Cabuza immigration.

Contemporaneous Events in the Altiplano

To understand the social and political context of the abandonment of the Tiwanaku colonial sites in Moquegua and the concurrent movement of Ilo-Tumilaca/Cabuza people into the coastal Osmore, it is useful to consider what was happening in the altiplano homeland. Tiwanaku chronology is based on subtle, assemblage-level distinctions rather than sequential ceramic styles (Janusek 2003b:55-56), so I simply adopt the period attributions determined by Janusek (2003b:36-39) in his list of dates from Tiwanaku, its satellite center Lukurmata, and other nearby sites.² Figure 9a plots calibrations of all the dates with error estimates under ± 200 years from Tiwanaku and Lukurmata that Janusek attributes to Late Tiwanaku IV-Early Tiwanaku V or simply Tiwanaku V. Dates attributed to Late Tiwanaku V-Early Pacajes are excluded as mixed, for Pacajes

is "abruptly," "dramatic[ally]" different from the Tiwanaku corporate style (Janusek 2003b:87) and presumably represents a distinct, later society. One such date, SMU 2473, is included because it relates to an apparent closing ceremony on the Akapana pyramid. The Tiwanaku dates include ceremonial contexts and residences of high to royal status, whereas the Lukurmata dates relate to more modest residences and perhaps temporary laborers.

Figure 9a suggests that Tiwanaku dates without a later component do not extend much past A.D. 1000. A Bayesian phase analysis places the end of unmixed Tiwanaku assemblages between A.D. 925 and 995 with 68 percent confidence. Commenting on many of these same dates, along with settlement pattern and other data, Binford and Kolata noted that "after about A.D. 1000 Tiwanaku and its secondary urban centers were clear failures," having experienced "complete deurbanization" (1996:51). In the same volume, Kolata and Ortloff suggested "a terminal date somewhere between about A.D. 900 and 1100" (1996:200). Several later dates attributed to Tiwanaku V have been reported since then. Although they have very large errors and are flagged by OxCal's phase analysis as outliers, they are included in the calculations, pushing the end of Tiwanaku a bit later.

A particularly telling date is SMU 2330 (Figure 9a), on a canine burial in a major drain in the Akapana pyramid (Kolata 2003:186). The Akapana's elaborate hydraulic features never functioned after this offering was placed around A.D. 1000 (Kolata 2003:184-187, 193-194). The Akapana's summit architecture was similarly closed with an offering of camelids and artifacts (Kolata 2003:189). Unfortunately, the date for this offering, SMU 2473 (Figure 9a), has an enormous error term of either ± 243 years (Janusek 2003b:36) or ± 210 (Kolata 2003:189), and Janusek attributes it to the Tiwanaku V-Early Pacajes phase.

Janusek (2003b:36-39) tabulates some later dates for Tiwanaku, Lukurmata, and three other sites that he attributes to Early Pacajes or Tiwanaku V-Early Pacajes. These dates (Figure 9b) suggest continuing occupations at both centers by people with a changing material culture. The Tiwanaku and Lukurmata dates are loosely spaced over some four centuries following A.D. 1000, in contrast to the many dates in the prior one or two hundred years. The post-deurbanization occupations may have

Table 2. Previously Unpublished Radiocarbon Dates and Calculated Phase Boundaries.

Culture or style	Site, context, material	Lab ID	¹⁴ C age ^a	δ ¹³ C	Cal A.D. 1 σ ^b	Background
Chen Chen	Cancha de Yacango, charcoal in top midden stratum, redeposited?	Beta 132158	1210 ±40	-23.0	770-890	Owen 1999b
Chen Chen	Chen Chen M1(95) burial 1758, vegetal rope	AA 37177	1100 ±29	-27.7	895-985	Owen 1997
Chen Chen	Chen Chen M1(95) burial 1731, wool textile	AA 40295	1038 ±47	-20.9	900-1030	Owen 1997
Tumilaca	Cerro San Miguel 63-14, ashy midden, charcoal	AA 47685	1017 ±37	-22.7	980-1040	Owen 1999b
Ilo-Cabuza	El Algodonal burial 519, wool textile	AA 37156	1044 ±39	-19.0 ^c	900-1030	Owen 1993a
Ilo-Cabuza	El Algodonal burial 354, wool textile	Beta 51060	960 ±60	-19.7	1010-1160	Owen 1993a
Ilo-Cabuza	El Algodonal burial 339, wool textile	Beta 51059	870 ±60	-19.8	1040-1240	Owen 1993a
Ilo-Cabuza	Loreto Alto unit 1525, charcoal from floor around hearth	Beta 51071	840 ±50	-26.2	1150-1270	Owen 1993a
Algarrobal Chiribaya	Loreto Viejo burial 2311, wool textile	AA 37146	1124 ±39	-21.3	890-980	Owen 1993a
Non-Algarrobal Chiribaya	Loreto Viejo burial 2303, wool textile	AA 40287	1113 ±37	-21.0	890-985	Owen 1993a
Algarrobal Chiribaya	Loreto Viejo burial 2310, wool textile	AA 37144	1029 ±38	-19.4	975-1030	Owen 1993a
Non-Algarrobal Chiribaya	El Algodonal mixed twigs in midden	Beta 51066	870 ±60	-25.6	1040-1240	Owen 1993a
Non-Algarrobal Chiribaya	Loreto Viejo mixed twigs in midden	Beta 51074	860 ±60	-26.4	1060-1260	Owen 1993a
San Geronimo Chiribaya	El Algodonal burial 512, wool textile	AA 37154	806 ±38	-19.2	1215-1275	Owen 1993a
Terminal Chiribaya	Carrizal Bajo burial T5, wool textile	AA 37181	785 ±48	-20.4	1215-1285	Reycraft, pers. com.
San Geronimo Chiribaya	El Algodonal burial 533, wool textile	AA 37158	777 ±38	-18.2	1220-1285	Owen 1993a
San Geronimo Chiribaya	San Geronimo II burial T4, wool textile	AA 37171	705 ±41	-20.9	1260-1390	Owen 1991
San Geronimo Chiribaya	San Geronimo II burial T1, prob. vegetal cord	AA 37167	668 ±43	-11.8	1280-1390	Owen 1991
Terminal Chiribaya	Carrizal Bajo burial T7, wool textile	AA 37179	561 ±51	-20.3	1310-1430	Reycraft, pers. com.
Start of Omo and Chen Chen styles	Calculated by Oxcal v3.5 ^d	-	-	-	825-925	
End of Omo and Chen Chen styles	Calculated by Oxcal v3.5 ^d	-	-	-	935-1015	
Start of Ilo-Tumilaca/Cabuza	Calculated by Oxcal v3.5 ^e	-	-	-	950-1010	
End of Ilo-Tumilaca/Cabuza	Calculated by Oxcal v3.5 ^e	-	-	-	1050-1220	
Start of Chiribaya	Calculated by Oxcal v3.5 ^e	-	-	-	860-960	
End of Chiribaya	Calculated by Oxcal v3.5 ^e	-	-	-	1360-1450	

^aConventional radiocarbon ages include δ¹³C fractionation corrections.

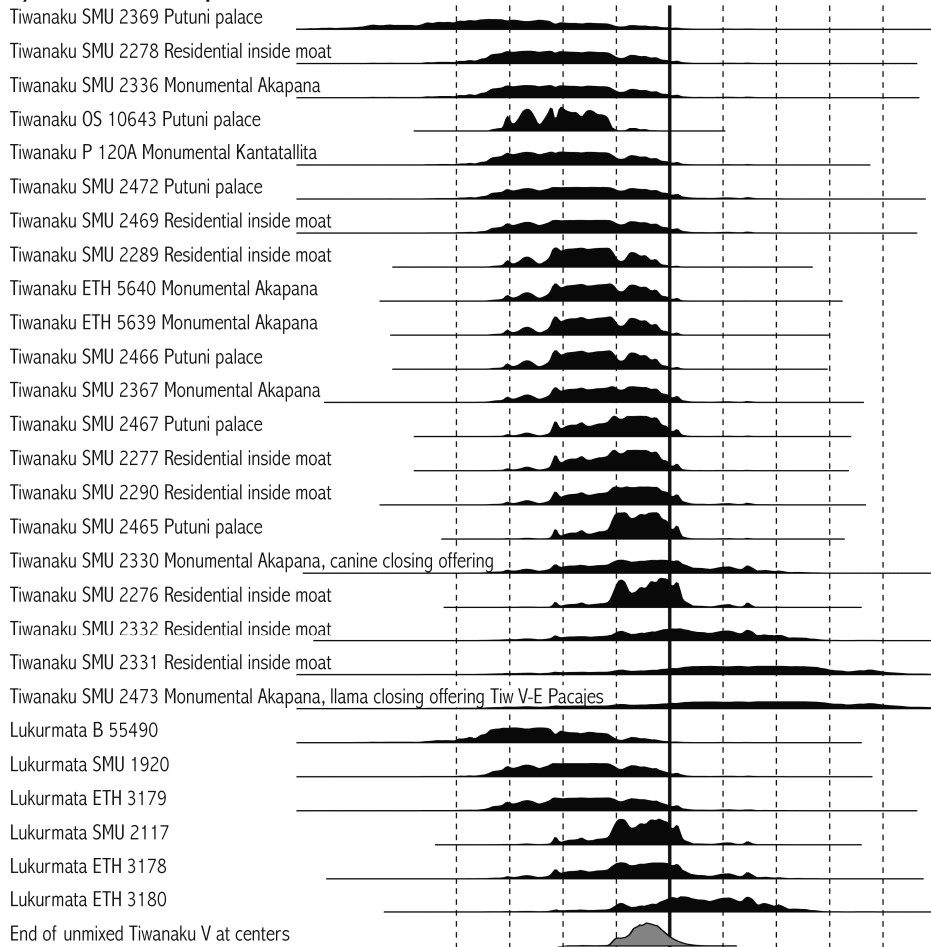
^b1-sigma ranges calibrated by OxCal v3.5 (Ramsey 2000), atmospheric calibration curve from Stuiver et al. (1998), with no southern hemisphere correction.

^cEstimated based on other samples of the same material. The conventional age is adjusted accordingly.

^dBased on dates in Figure 7a. The outlying earliest Omo style date is excluded from this calculation.

^eBased on dates in Figures 7b and 8.

a) Tiwanaku V altiplano centers



b) “Tiwanaku V-Early Pacajes” and Early Pacajes

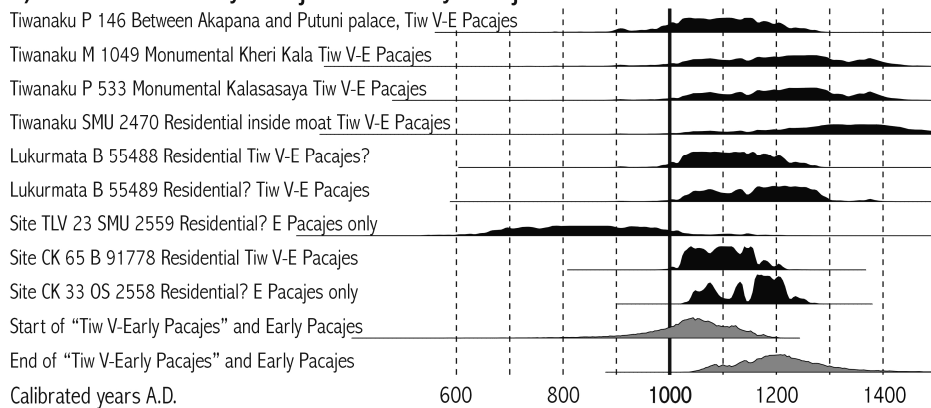


Figure 9. Calibrated radiocarbon dates and calculated phase boundaries of Tiwanaku and post-Tiwanaku styles in the southern Titicaca region. Date distributions and phase boundary estimates plotted by OxCal v3.5. Phase boundaries are based on the dates shown for the given period only, without modelling other phases. Sources: (a) Janusek 2003a:36-39. Dates attributed to Tiwanaku V or Late Tiwanaku IV-Early Tiwanaku V, with errors less than ± 200 years, plus SMU 2473 (see text). (b) Janusek 2003a:36-39. Dates attributed to Early Pacajes or Late Tiwanaku V-Early Pacajes, except SMU 2473, which is included in Figure 9(a).

been sparse or brief and discontinuous. The scarcity of dates straddling A.D. 1000 hints at a hiatus or dip in occupation at the centers around that time.

At Lukurmata, Bermann (1994:217-218, 223-224) notes that during Tiwanaku V, the main ridge area was largely abandoned, the overall population dropped, and the public architecture probably fell out of use. Unfortunately, this decline is not well dated. Bermann (1994:56-58) adopted a conventional range of A.D. 800-1200 for Tiwanaku V based on published work, but his data do not refine that chronology. He encountered no Tiwanaku V house floors but recovered one radiocarbon date from a trash pit off the main ridge (Figure 9a, ETH 3180; Bermann 1994:218, 266) that he and Janusek (2003b:39) assign to Tiwanaku V.

Citing Seddon (1998), Bauer and Stanish (2001:147-154, 196, 242, 252-253) describe the Tiwanaku occupation at the pilgrimage destination site of Chucaripupata on the Island of the Sun. Chucaripupata was abandoned by the end of Tiwanaku V. The two-sigma range of the latest of Seddon's four radiocarbon dates on the Tiwanaku occupation, A.D. 780-990, suggests that this center for high-status Tiwanaku visitors was abandoned before A.D. 1000. Both Lukurmata and Chucaripupata tend to corroborate a decline of Tiwanaku's influence in the altiplano around A.D. 1000 or earlier.

Kolata has argued for a different vision of the altiplano around A.D. 1000 or shortly before. He suggests that the canine offering at the Akapana pyramid did not mark the end of its use but, rather, a radical shift in its function "at some point in the tenth century" (2003:193). Noting the closing of the hydraulic system, offerings of incomplete human corpses and ceramics depicting trophy heads and felines, and a sculpture of a feline holding a trophy head, Kolata suggests that the Akapana's water symbolism was appropriated by Tiwanaku "warrior-elites" who shifted the emphasis to "aggressive, martial themes ... in the aftermath of ... military conquest" (2003:194).

In this model, Tiwanaku remained an urban capital until the "state disintegrated as a regional force ... between A.D. 1000 and 1100" (Kolata and Ortloff 1996:181). More recently, Kolata has suggested that A.D. 1100 was "the beginning of the collapse of the Tiwanaku civilization" (2000:171), and Janusek (2003b:37) dates the end of the Tiwanaku

corporate ceramic style to A.D. 1150. These later terminal dates correspond better to the abandonment of many of the raised fields that had sustained Tiwanaku's population (Figure 10; Binford et al. 1997:245). The probable cause was falling lake and water table levels caused by a decline in rainfall, precisely dated by annual layers in the Quelccaya ice cap, that started from long-term highs around A.D. 1010, dropped to the long-term average around A.D. 1040, and remained below average for centuries thereafter (Abbott et al. 1997; Binford et al. 1997:241; Binford and Kolata 1996; Kolata 1993, 2000:172; Kolata and Ortloff 1996; Ortloff and Kolata 1993; Thompson et al. 1985:973).

However, the abandonment of the urban centers, the end of production of Tiwanaku ceramics, and the loss of the raised fields were separate events. It remains to be demonstrated that the proposed agricultural cause actually preceded or coincided with the social effects. In fact, radiocarbon evidence places the end of unmixed Tiwanaku V material at Tiwanaku and Lukurmata around or slightly before A.D. 1000 (above and Figure 9), when rainfall was increasing to historic highs and a century or more before the construction and use of many raised fields ended (Figure 10; Kolata and Ortloff 1996:192). Dating the end of the Tiwanaku corporate ceramic style and urban occupation is complicated by the lack of any date from a purely Late Tiwanaku V context without a later Pacajes component (Janusek 2003b:36-39). Janusek (2003b:57) notes that Late Tiwanaku V is the least well-defined Tiwanaku period, suggests that it was a period of "state crisis and disintegration," and places it between A.D. 1000 or 1050 and 1150, explicitly to correspond to the abandonment of the Katari Basin raised fields. Using the abandonment of the raised fields to date the collapse assumes, rather than demonstrates, agricultural decline as the cause of deurbanization. I suggest that the dating of field abandonment and the collapse of the Tiwanaku centers, state, and corporate ceramic style be decoupled. The collapse of the Tiwanaku centers is most convincingly dated by evidence from the centers themselves.

In summary, there are two models for the altiplano around A.D. 1000, when the Tiwanaku colonists in Moquegua dispersed. The model that I favor (as does Stanish [2002:190, 2003:203]) sug-

Raised fields in the Katari basin

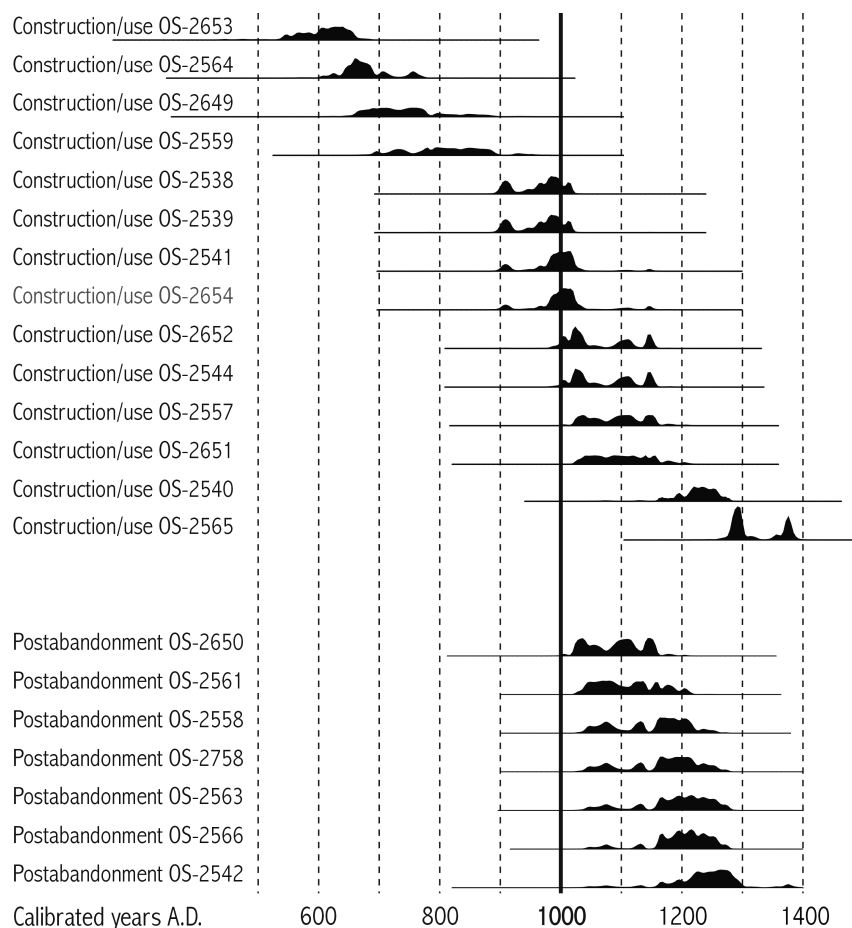


Figure 10. Calibrated radiocarbon dates of raised fields in Katari basin, from Binford et al. 1997:245. Date distributions plotted by OxCal v3.5.

gests that around A.D. 1000 or slightly before, the Tiwanaku state collapsed, its corporate style of ceramics ceased to be produced, and Tiwanaku and Lukurmata were abandoned (Figure 9a). The model favored by Kolata (2003) posits not a collapse but, rather, a radical realignment of the ceremonial core at Tiwanaku, with the public assertion of a militaristic elite. In either case, potentially traumatic changes in the Tiwanaku homeland coincided with the abandonment of the Moquegua Tiwanaku sites and the scattering of the former colonists.

The First-Stage Diaspora

Most Andeanists agree that Tiwanaku established distant enclaves during Tiwanaku V (Browman

1984, 1985; Goldstein 1989a, 1989b; Kolata 1993; Moseley 2001; Moseley et al. 1991), some of which fit the criteria for a colonial diaspora. There was clearly a Tiwanaku V occupation near Moquegua (Blom et al. 1998; Buikstra 1995; Garcia 1990; Goldstein 1989a, 1989b, 1993b, 1993c; Goldstein and Owen 2001; Moseley et al. 1991; Owen 1997; Owen and Goldstein 2001; Vargas 1988; etc.). Tiwanaku material near Cochabamba is usually considered to be comparable (Kolata 1993; Moseley 2001; Stanish 2002:183), although Higuera (1996) argues that it reflects local developments. Stanish (2003:191-192) sees a Tiwanaku colonial occupation in Larecaja or Munecas, east of Titicaca. Small numbers probably lived in the Azapa Valley in northern Chile (Goldstein 1996) and possibly at

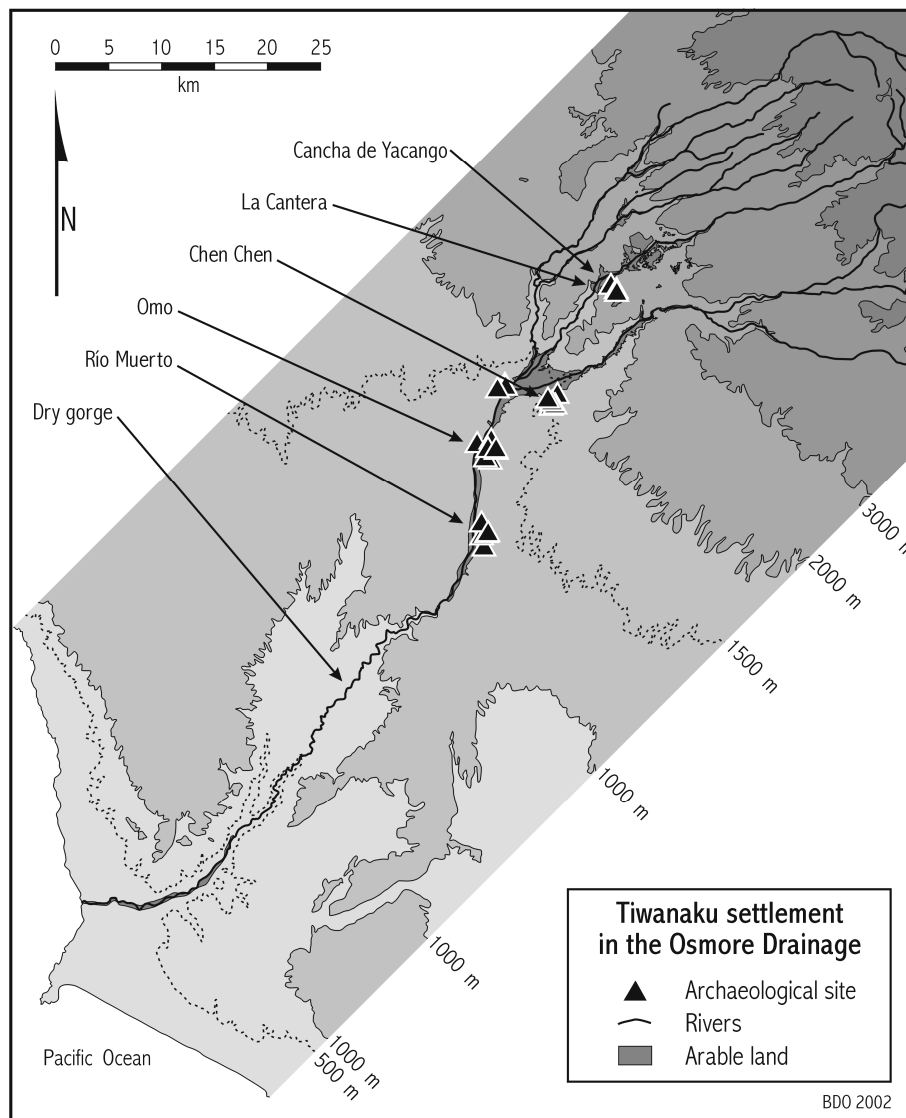


Figure 11. Tiwanaku habitation sites in the Osmore drainage (after Owen and Goldstein 2001:183).

the remote oasis of San Pedro de Atacama (Rodman 1992; Torres-Rouff 2002:170), although these were clearly not agricultural colonists. Tiwanaku material culture with antecedents in the altiplano appeared suddenly in several peripheral regions.

In Moquegua, the transplanted material culture included not only ceramics but also lithics, house styles, burial practices, and ceremonial architecture (Goldstein 1989a, 1989b, 1993c; Goldstein and Owen 2001; Owen 1998, 2001). The copious remains suggest permanent residence by many people (Goldstein 1989a, 1989b; Goldstein and Owen 2001), as do the over twelve thousand burials at Chen Chen alone (Owen 1997). The Moquegua

Tiwanaku settlements were clustered in a few enclaves (Figure 11) with independent water sources and irrigated fields reclaimed from the desert (Goldstein 1989a; Goldstein and Owen 2001; Owen and Goldstein 2001; Williams 1997). This settlement pattern, along with a large sector of stone-lined storage pits at Chen Chen (Goldstein and Owen 2001; Owen 1997), suggests a colonial occupation that produced crops for export, maintaining relations with the homeland. The colonists used distinctive Tiwanaku ceramics, textiles, wooden spoons, and burial practices but exchanged virtually no archaeologically detectable goods with their Huaracane or Wari neighbors (Owen and

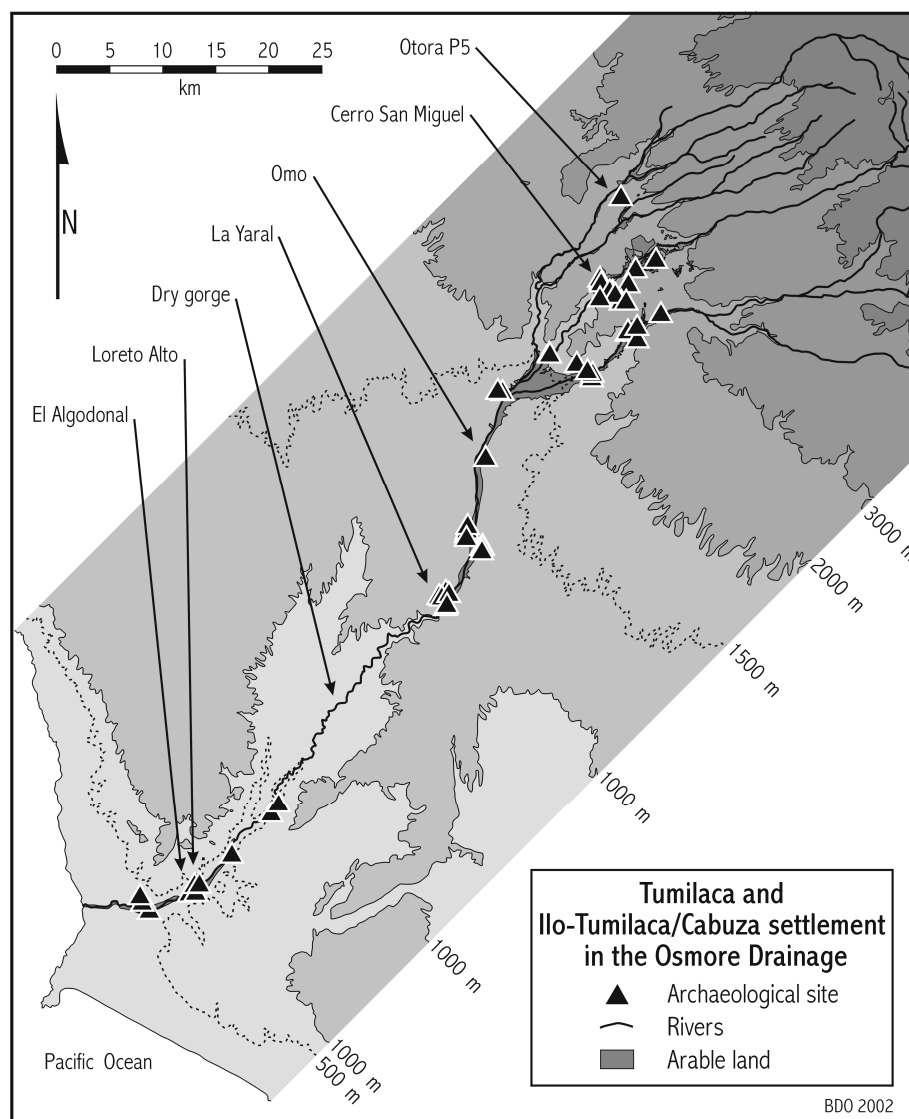


Figure 12. Tumulaca and Ilo-Tumulaca/Cabuza habitation sites in the Osmore drainage (after Owen and Goldstein 2001:184; Stanish 1992).

Goldstein 2001). This pattern of extreme social boundary marking fits the expectation of a troubled relationship between diaspora and host populations. Using nonmetric cranial traits, Blom et al. (1998) found that the Moquegua population resembled altiplano Tiwanaku people closely and differed from the indigenous Huaracane, corroborating the diaspora model.

The Second-Stage Diaspora

The Tiwanaku-related material from sites other than these definite Tiwanaku V occupations makes

sense as the result of a second diaspora around A.D. 1000 or slightly before, when altiplano evidence suggests that the Tiwanaku centers and corporate ceramic style were being abandoned. Alternatively, Kolata's (2003:193-194) reconstruction would have the second-stage diaspora coincide with the dramatic reorientation of Tiwanaku ideology and ritual to promote a militaristic elite. Either way, some people from the Tiwanaku colony of Moquegua dispersed to the coastal valley, while others moved to the sparsely populated upper Osmore drainages such as the upper Torata and Otoro valleys (Figure 12; Owen 1993b, 1994, 1996;

Owen and Goldstein 2001; Stanish 1992). A few moved north and inland into the Carumas-Calacoa area, where there had been no Tiwanaku occupation (Figure 1; Owen 2005). Tiwanaku-related ceramics from Arequipa (Linares 1989; Lumbreras 1974; Neira 1990) hint at a similarly late introduction. Ceramics from a few small settlements in the Caplina Valley resemble the second-stage Tumilaca style (Vela 1996) and are associated with a wooden spoon in the Tumilaca, not Chen Chen, style (Uhle 1922: Lamina XIV).

In this second-stage diaspora, the memory and myth of the homeland would have referred not only to the altiplano core but also to colonies such as Moquegua, which were probably the immediate sources of dispersal for many. This expanded, decentered homeland has parallels in the rediasporas of the Jews from centers in Spain and of African Americans from the southern United States (Clifford 1994:304, 320).

Evidence of Dispersal: Artifact Styles

The Tumilaca style in the middle valley presumably developed from the Chen Chen style, because it is so similar that individual pieces are often difficult to distinguish (Goldstein 1985, 1989a, 1989b). In turn, many coastal Ilo-Tumilaca/Cabuza ceramics are so similar to the middle valley Tumilaca style that they almost certainly derived from them, and they are quite different from the potentially antecedent coastal styles, Chiribaya and Algodonal Early Ceramic (Owen 1993a, 1993b). Although Chiribaya ceramics of the Algarrobal phase (Jessup 1990a, 1991; Owen 1993b) share the fine paste and some other characteristics of the Ilo-Tumilaca style, possibly indicating common origins, shared material sources, or even potters who produced both styles, there are virtually no transitional examples, and the styles differ so much that neither is a plausible antecedent of the other. Table 3 compares a few of the most clearly contrasting traits.

Ilo-Tumilaca/Cabuza textiles similarly match those of the middle valley Tiwanaku tradition while differing markedly from Chiribaya ones in form, technique, layout, and motifs. Only the plainest pieces are not obviously of one style or the other. Transitional textiles are virtually unknown (Boytner 1992, 1998; Owen 1993b). The small sample of Algodonal Early Ceramic textiles is poorly

known and includes only plain cloth and some colored threads to hint at minimal decoration. Table 4 notes a few of the most clearly contrasting textile traits.

The pattern continues with wooden spoons from burials and occasional domestic contexts (Figure 13; Table 4). Ilo-Tumilaca/Cabuza spoons closely match middle valley Tumilaca ones and are similar enough to the Chen Chen spoons to be derived from them. Chiribaya spoons are markedly different. No Algodonal Early Ceramic spoons are known, but two from the similar Huaracane culture had short, sculptural handles and long, narrow bowls unlike any in the later styles (Goldstein 2000b:352). Espouey (1971) found the same mutually exclusive associations of spoon styles with Chiribaya and "Loreto Viejo" ceramics in the Azapa Valley. Textiles, ceramics, and wooden spoons could all have served to signal group affiliation. The Ilo-Tumilaca/Cabuza versions contrasted with Chiribaya analogs and matched middle valley Tumilaca ones, suggesting a consciously marked distinctive identity affiliated with the middle valley.

Evidence of Dispersal: Domestic Space

Identity markers such as textiles could have been adopted by people with no biological connection to their source. We can also consider traits that might be less subject to manipulation, such as the size of family units and patterns of space utilization reflected in domestic architecture (Bawden 1993).

Ilo-Tumilaca/Cabuza house plans differed sharply from their potential antecedents in the coastal valley. The match to middle valley Tumilaca and Chen Chen architecture is less clear, but there are similarities (Bawden 1989b, 1993; Goldstein 1989a:179-199, 211-221, Figures 72, 74, 85, 88-89). Ilo-Tumilaca/Cabuza dwellings (Figure 14) had thin walls of vertical canes standing in a narrow trench, sometimes with small 6 to 10 cm posts inside the corners or on both sides of the wall. Houses were rectangular, freestanding structures, usually with one or two rooms. The largest known had four rooms plus a flimsier attached two-room cooking shack, although the broadest central terraces at Loreto Alto could have accommodated a few larger dwellings. Algodonal Early Ceramic dwellings apparently involved no canes, wall

Table 3. Comparisons of Ceramic Styles.

Trait ^a	Early Ceramic	Chen Chen	Tumilaca	I-T/C	Chiribaya
Globular neckless cooking vessels w/o handles	+	-	-	-	+
Coarse paste with varied inclusions ("pasta local")	+	-	-	-	+
Shallow rounded bowls w/handles	-	-	-	-	+
Straight-sided cups (<i>keros</i>) w/handles	-	-	-	-	+
White dots on black line motif	-	-	-	-	+
Trapezoidal panels and semicircles design layout	-	-	-	-	+
Brown paint color (with black, white, orange-on-red slip)	-	-	-	-	+
Wavy line between straight lines motif	-	Rare	+	+	-
Outlined or double outlined unfilled stairstep motif	-	+	+	+	-
Black lines on pale red slip	-	+	+	+	-
Fine sandy paste	-	+	+	+	Al g. ^b
Hyperbolic flaring bowls (<i>tazones</i>)	-	+	+	+	-
Hyperbolic flaring beakers (<i>keros</i>)	-	+	+	+	-
"Coke glass" beakers (<i>keros</i>)	-	+	+	+	-

^aAfter Goldstein (1985, 1989a) and Owen (1993a). The characteristics shown are just a sample of the many that follow the same pattern.

^bPresent only in the Algarrobal substyle of Chiribaya.

Table 4. Comparisons of Styles of Textiles and Wooden Spoons.

Trait	Early Ceramic	Chen Chen	Tumilaca	I-T/C	Chiribaya
<i>Textiles</i>					
Complex figural designs in supplementary-warp bands	-	-	-	-	+
Shirts with edge stripes that reverse at the shoulder	-	-	-	-	+
"Belt-bags" (<i>faja-bolsas</i>)	-	-	-	-	+
Narrow stripes, variable width, up to seven colors	-	+	?	+	-
Light blue and green colors	-	+	?	+	-
Embroidered plaque below neck slit of shirt	-	?	?	+	-
<i>Wooden spoons</i>					
Very narrow bowl, short sculptural handle	+	-	-	-	-
Bowl roughly round	-	-	-	-	+
Narrow, thick, long handle	-	-	-	-	+
Handle end notched to form one or two small trapezoids	-	-	-	-	+
Handle with chip carving	-	+	-	-	-
Wide, thin, medium length handle	-	+	+	+	-
Bowl somewhat longer than wide	-	+	+	+	-
Handle with camelid silhouette	-	Rare ^a	+	+	-

^aDisselhof 1967:215.

trenches, or posts on any of six terraces tested. Instead, abundant thick, stiff reeds called *achon* suggest an entirely different building tradition (Owen 1993a).

Chiribaya domestic architecture shared the canes and wall trenches of Ilo-Tumilaca/Cabuza houses but differed in layout and other details (Figure 14). The smallest Chiribaya houses resembled Ilo-Tumilaca ones, but many were large rectangular compounds with thick, deeply planted perimeter

walls at the edges of the terrace. Big posts up to 40 cm in diameter were common, both along walls and out in large spaces. The compounds were complexly subdivided into roofed and open spaces interconnected by corridors and contained cylindrical cane-walled structures, possibly silos. Chiribaya compounds at La Yaral had two to eight rooms (Garcia 1988; Rice 1993), and an apparently typical example at Chiribaya Baja had at least 10 rooms (Jessup 1990a, 1991; Miranda 1993; Umire and

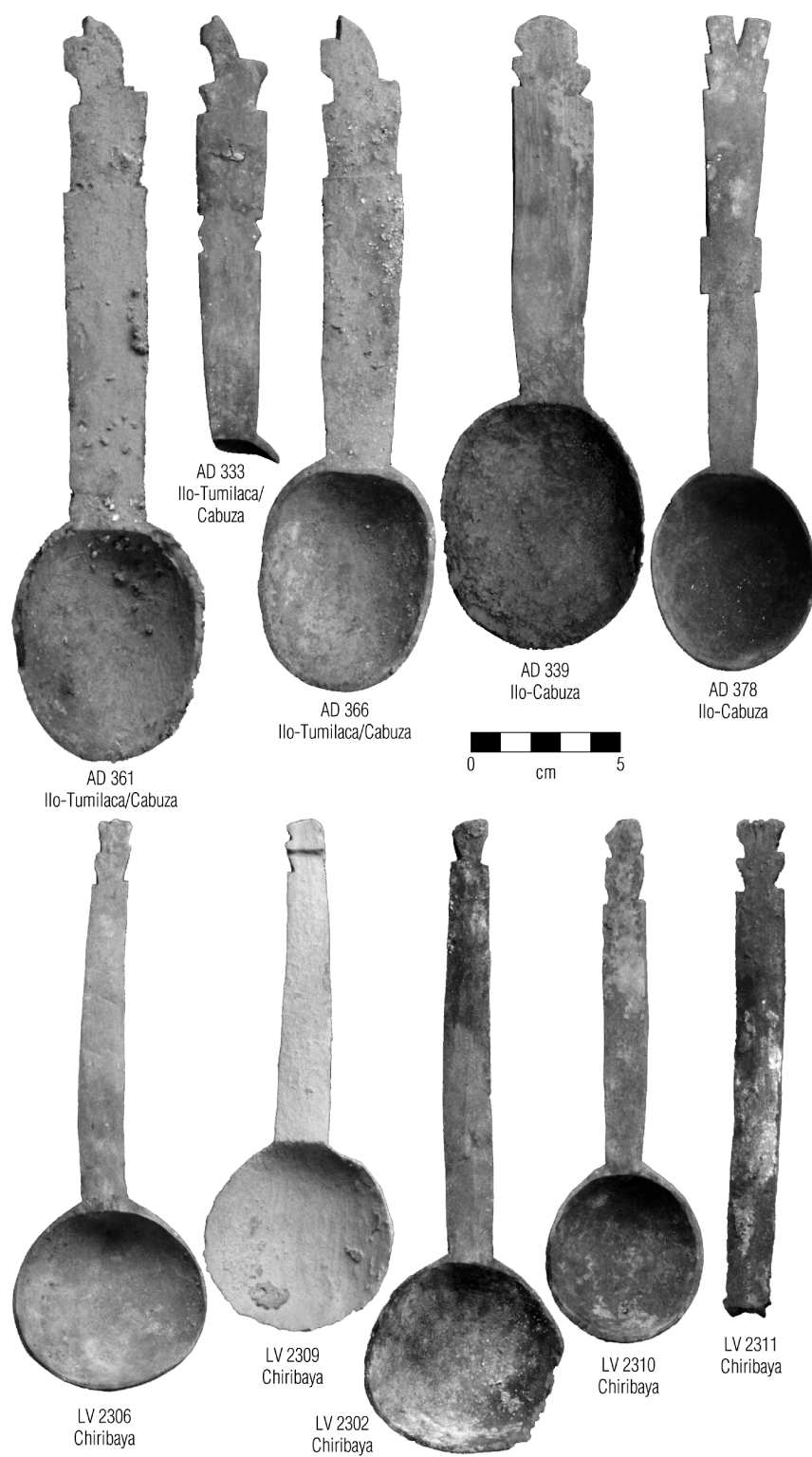


Figure 13. Wooden spoons in distinct Ilo-Tumilaca/Cabuza and Chiribaya styles.

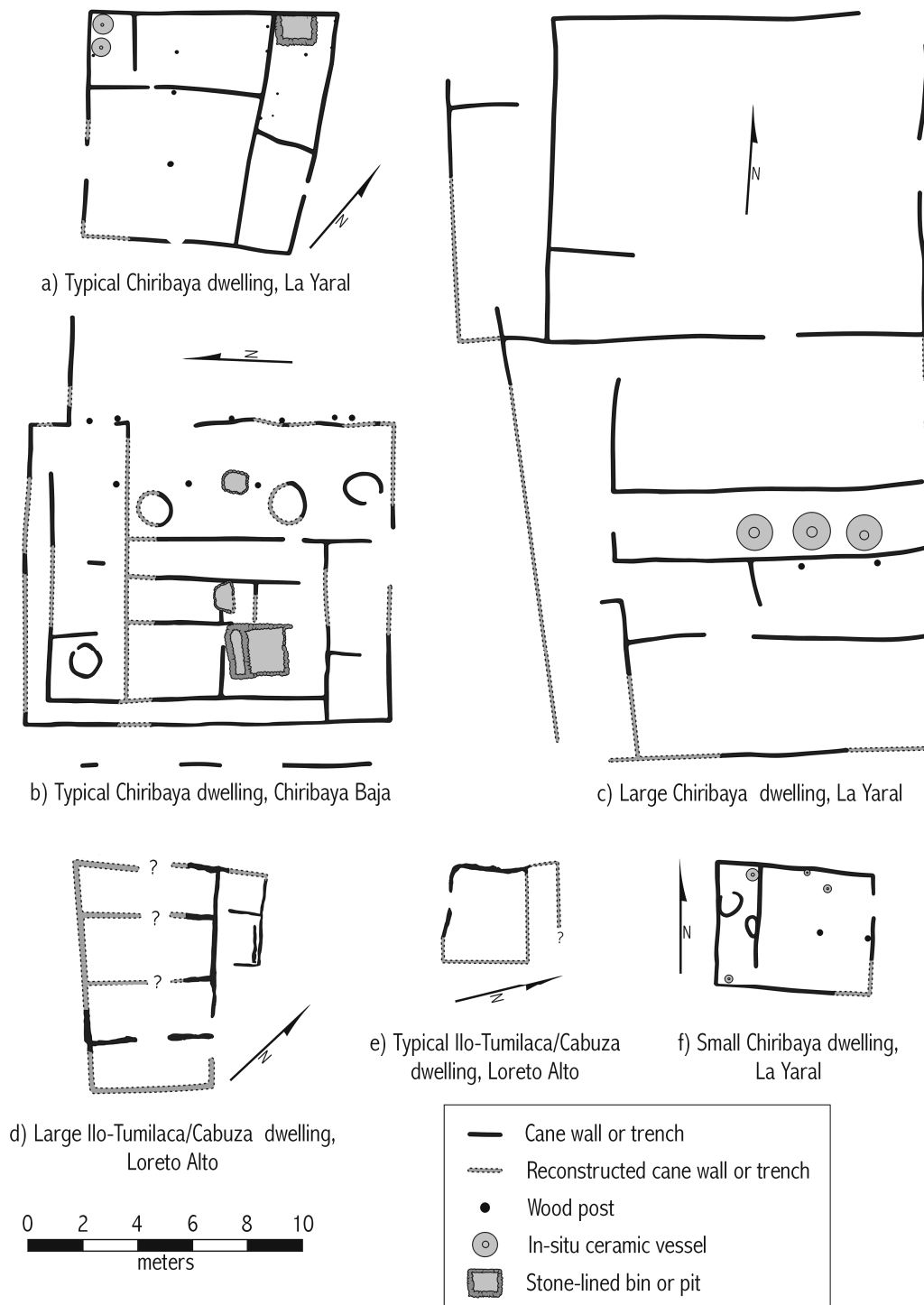


Figure 14. Comparison of Ilo-Tumilaca/Cabuza and Chiribaya house plans, all at the same scale. (a) based on García (1988:Figure 7b); (b) based on Umire and Miranda (2001:Figure 40 and 41); (c) based on Rice (1993:Figure 6.5); (d) and (e) based on Owen (1993a:Figures A-10 and A-11); (f) based on García (1988:Figure 7a).

Miranda 2001). Partially excavated Chiribaya houses at El Algodonal and Loreto Viejo follow the Chiribaya Baja pattern (Owen 1993b).

The three coastal groups differed in architectural technology as well as in the size and organization of residential groups and domestic activities. These differences suggest that they were not closely related groups separated by superficial ideological boundaries but, in fact, represent cultural trajectories that had been distinct for some time.

Evidence of Dispersal: Mortuary Practices

Ilo-Tumilaca/Cabuza burial practices were virtually indistinguishable from middle valley Tumilaca ones and their Chen Chen antecedents (Buikstra 1995; Garcia 1990; Goldstein 1989a, 1989b; Owen 1997; Pari 1980; Vargas 1988), but they differed considerably from the other coastal traditions. Ilo-Tumilaca/Cabuza dead were typically tightly flexed, wrapped in wool textiles, bound with vegetal-fiber ropes, and seated upright in a pit, sometimes capped with mortared stones, or in a cylindrical, stone-lined cist. Grave goods sometimes included one or two ceramic vessels; often a wooden spoon; and some beans, manioc, corn, *pacay*, or *achira*. Coca bags, baskets, leather sandals, camelid heads or feet, guinea pigs, and other items were sometimes added (Owen 1993b).

Algodonal Early Ceramic dead were treated very differently (Owen 1993b). One individual was buried in a domestic terrace in an extended, face-down position, covered by stone slabs. Others were buried under large artificial mounds (*tumulos*) like those of the Alto Ramirez culture in Azapa (Focacci and Erices 1973; Munoz 1987) or the Huaracane in Moquegua (Goldstein 2000b), sometimes with body parts separated and interred in nonanatomical positions (Owen 1993a, 1993b).

Chiribaya burials were more like Ilo-Tumilaca/Cabuza ones, but the differences are marked (Buikstra 1995; Gherzi 1956; Jessup 1990a, 1990b, 1991; Owen 1993b, 1995; Santos 1983). Although some Chiribaya tombs are cylindrical, most are rectangular, and the body was generally bound with wool ties. Lavish burials are common, and many contain far more than the richest Ilo-Tumilaca/Cabuza burials. Some common Chiribaya grave goods, such as wooden boat models, *lucuma* fruits, guavas, and *ají* peppers, are unknown in Ilo-Tumilaca/Cabuza burials.

The capstones of many Ilo-Tumilaca/Cabuza tombs were removed in antiquity. The seemingly undisturbed contents are usually covered by local dirt and capped by volcanic ash that fell in A.D. 1600 (Bouysse-Cassagne 1988; Owen 1993b). Many "Loreto Viejo" burials in the Azapa Valley were treated in the same way (Focacci 1981; Santoro and Ulloa 1985), as were Chen Chen and Tumilaca burials in the middle and upper valleys (Disselhof 1967; Owen 1997), but no similarly treated Chiribaya tomb has been reported. Given that Chiribaya tombs are richer, much more plentiful, and at least as easy to find, such disturbance would not be limited to Tiwanaku-related tombs if it resulted from looting by pre-1600 Europeans. Whether this opening of tombs was a normal mortuary practice or a violation, it indicates that pre-Hispanic people considered Ilo-Tumilaca/Cabuza graves to be in the same category as Tiwanaku graves from the middle valley and different from the burials of other coastal people.

Evidence of Dispersal: Bioanthropology

Bioanthropological confirmation of the Ilo-Tumilaca/Cabuza intrusion is still lacking, but two studies are indirectly supportive. Sutter's (2000) analysis of dental traits indicates that the Chiribaya population in the coastal Osmore was intrusive, suggesting a population movement similar to the proposed Ilo-Tumilaca/Cabuza dispersal slightly later. Rothhammer and Santoro (2001:64) found evidence in cranial traits of increased interbreeding or population movements from the altiplano to the coast of northern Chile from roughly A.D. 900 to 1100, as would be expected if former Tiwanaku colonists bearing "Loreto Viejo" ceramics moved into the region.

Evidence of Collective Memory of the Homeland

The Ilo-Tumilaca/Cabuza population maintained Tiwanaku iconography and burial practices for at least several generations, suggesting continuing, shared memories about the homeland. One Tiwanaku motif, a stylized flamingo, may be linked to the homeland environment. Flamingos congregate at lakes in the high puna and altiplano, but during several full years spanning all seasons, I have never seen one in the Osmore drainage or on the nearby coast. The flamingo motif is common on Tumilaca ceramics in the middle and upper

Osmore, suggesting continuing memory of the homeland and possibly contact with it, but less so in the coastal valley, suggesting a greater physical and psychological distance.

Evidence of Ethnic Group Consciousness Based on Shared History

The contrasts between Ilo-Tumilaca/Cabuza and Chiribaya material culture suggest that both groups expressed distinctive ethnic identities. The Ilo-Tumilaca/Cabuza identity was evidently shared with Tumilaca people in the middle and upper drainages. Many of the dispersed Tiwanaku-related settlements did share aspects of their recent history, including loss of affiliation with a prestigious and powerful state; migration; homesteading, often as small, weak groups in sparsely populated areas such as the upper Osmore drainage or the Carumas-Calacoa area where threatening circumstances required defenses; and in some cases becoming minority populations of common or even low status, as in the coastal Osmore. Even if they were not in regular contact, diaspora communities had reasons to feel solidarity.

A Victim/Refugee Diaspora

People bearing Ilo-Tumilaca/Cabuza material culture moved into the coastal Osmore when the altiplano homeland centers were being either depopulated or radically reoriented by a military elite and while Tiwanaku colonial outposts were being abandoned. In the middle Osmore, this abandonment was not a gentle process. The Chen Chen-style temple at Omo was destroyed, its adobe walls were pushed over, and its cut stones were pulled down, systematically smashed, and casually reused for lining ordinary burials (Goldstein 1993c:42). Some Chen Chen-style settlements were reduced to "pitted rock piles" in a seemingly pointless campaign of large-scale vandalism (Goldstein 1989a:176-177; Moseley et al. 1991). Because only Chen Chen-style and not Omo-style sites were affected, the destruction probably dates to the abandonment period, when the identities of the inhabitants were known and stirred strong feelings. The canal and reclaimed fields at Chen Chen were abandoned (Williams 2002). Most settlement in the middle and upper valleys shifted to defensible sites, some with circumvallating walls

(Owen and Goldstein 2001). The loss of ceramic motifs such as the "gateway god" may indicate repudiation of ideas most associated with Tiwanaku institutions (Goldstein 1993c:42).

This violent disintegration in Moquegua may have paralleled a similarly traumatic collapse in the altiplano. Berenguer (2000:95-97) paints a poetic but specific picture of revolt and destruction bringing down the Tiwanaku capital. Couture and Sampeck (2003:251, 258-259, 262) describe the abandonment of the Putuni palace at the heart of Tiwanaku as "abrupt, even violent," with large storage vessels smashed in place, quantities of camelid meat left unprepared, and the thatch roof burned. Janusek suspects that "local groups turn[ed], perhaps violently, away from state leaders" (2003a:295).

Virtually every Tiwanaku-style monolith and stone relief of the "gateway god" has laborious, severe damage concentrated on the head, face, and especially the nose (Couture and Sampeck 2003: Figure 9.38; Kolata 1993: Figure 5.34, 2003: Figures 7.28b, 7.4-7.5; Posnansky 1945, 1: plate XLVII, 2: Figures 60, 108, 116, 126). Many faces on other architectural elements are also damaged, albeit not as consistently and thoroughly (Kolata 1993: Figures 5.35a-5.35b; Posnansky 1945, 2: Figures 22a, 128-129, 129a, 130), and even the *chachapuma* feline from the foot of the Akapana pyramid (Kolata 1993: Figure 5.23) has its nose broken off. This damage cannot be well dated, and some may not be intentional. In contrast, among the tenoned heads from the semisubterranean temple that are not too eroded to evaluate, no published examples show defacement like the monoliths, and many appear untouched (Berenguer 2000:12; Escalante 1993: Figure 137; Kolata 1993: Figure 5.31, 2003: Figure 7.27; Ponce 1990: Figures 18-24; Posnansky 1945, 1: plates VIIa-VIIb, IXa). Likewise, the one anthropomorphic stela from the semi subterranean temple in non-Tiwanaku style is apparently undamaged (Posnansky 1945, 2: Figure 87). The tenoned heads and non-Tiwanaku stelae have been interpreted as sacred *huacas* captured by Tiwanaku from other groups (Kolata 2003:197; Stanish 2002:186). This selective defacement suggests that the vandals knew what each sculpture stood for and were expressing hostility toward the state but not its subjects. At Lukurmata, finely cut stones from the Tiwanaku ceremonial architecture were incorpo-

rated into ordinary tomb construction, just as they were near the demolished temple at Omo (Bermann 1994:220-221; Goldstein 1993c:43).

If Kolata's late dating of Tiwanaku abandonment is correct, the uprising implied by this vandalism would have occurred around A.D. 1150 (Janusek 2003b:37; Kolata 2000:171), and it would have been merely a reprise in the heartland of the destruction in Moquegua a century or two before. If Tiwanaku collapsed around A.D. 1000, then the catastrophic breakdown of the Moquegua colony and the scattering of its population probably occurred within decades of, or concurrently with, a violent upheaval that brought down the state in its altiplano capital.

The unprecedented dispersal of people bearing Tiwanaku-related material culture when the temple at Omo and multiple Chen Chen settlements were destroyed, their selection of distant, often underpopulated destinations, and their preference for defensible locations and walls all suggest refugees scattering from civil chaos in the middle Osmore Valley, if not elsewhere as well. What precipitated this chaos and who participated in it remain unknown. Omo-style ceramics disappeared around this time, and they do not seem to be the direct antecedents of the Tumilaca or Ilo-Tumilaca/Cabuza style. If they marked a social group, those people emigrated, assimilated, or expired. If the remaining Tumilaca population of the middle valley descended from Chen Chen colonists, then those colonists were presumably present during the unrest. In that case, those who left in the re-diaspora may have fled internal factional strife, maybe after altiplano homeland institutions lost the power to resolve conflicts in Moquegua (see Goldstein 1993c:42). If Kolata's hypothesized rise of a military elite at this time is correct, then their postulated military campaigns might have reached the Moquegua colony, perhaps to quell a revolt or conflict, with permanently devastating results. If the indigenous Huaracane were still present (Owen and Goldstein 2001), they may have vented grievances against the colonists, perhaps encouraged by their loss of support from the collapsing altiplano core. If Cerro Baúl was still occupied (Williams 2001:73, 82), the last Wari, or their departure, may have sparked the destruction of the colonial settlements and encouraged Tumilaca people to disperse. Williams (2002:361) pro-

poses that the protagonists were Tiwanaku factions divided not by the Omo versus Chen Chen social boundary but by their position in the hydrological and political system, with one faction allied with the Wari at Cerro Baúl to divert water upstream of the main colonies and the other remaining at the Tiwanaku installations whose water supply was reduced by the upper drainage farmers.

While the colonial sites of the first-stage diaspora clustered near reclaimed field systems, the Tumilaca sites in the middle and upper valleys were more uniformly spaced, suggesting locations selected to minimize contact and conflict with neighbors. Tumilaca settlements lack the concentration of storage pits that suggest production for export at Chen Chen (Goldstein 1989a; Goldstein and Owen 2001; Owen 1997). The middle and upper valley Tumilaca sites of the second-stage diaspora do not resemble a colonial province but, rather, competing, independent, subsistence agriculturalists.

The coastal Osmore may have been an unusual destination for Tumilaca refugees, in that it was probably already occupied. Though the few dates for the Early Ceramic occupation are all before A.D. 610 (Owen 1993a, 1993b, 2002), this indigenous population may have remained. In addition, the Ilo-Tumilaca/Cabuza settlements were surrounded and outnumbered by Chiribaya villages. The Chiribaya were probably already in the valley, or at the latest, they appeared concurrently with the Ilo-Tumilaca/Cabuza refugees (Figures 7-8).

Ilo-Tumilaca/Cabuza settlers in the coastal Osmore Valley were also unusual in that they did not select defensible sites or build defensive walls but, instead, apparently lived in intimate and peaceful contact with the Chiribaya population, probably sharing the valley's main canal (Owen 1993b). Differences in their shell and botanical discards might simply reflect divergent dietary preferences but could indicate a partitioning of resource zones, in which the Chiribaya had exclusive access to trees along the river and the coastline was divided into ecologically distinct sectors exploited by each group (Owen 1993b).

In almost every respect, the Chiribaya population seemed better off. Many burials contained five, 10, or more ceramic vessels, whereas no known Ilo-Tumilaca/Cabuza burial had more than two. Chiribaya ceramics routinely sport two to four paint colors

on a highly burnished slip, whereas Ilo-Tumilaca/Cabuza ceramics usually have one color, and only rarely up to three, on a poorly finished ground. Chiribaya textiles often have elaborate figural designs and large areas of dyed color, whereas most Ilo-Tumilaca/Cabuza textiles have simpler decorations and small colored features. Chiribaya middens and burials contain occasional metal items, whereas Ilo-Tumilaca/Cabuza ones almost never do. Chiribaya houses suggest a greater expenditure on materials and labor. The one marginally monumental site in the valley, Chiribaya Alta, is on a high promontory with two partially circumvallating banks and ditches and vast surrounding cemeteries. The overwhelming majority of ceramics there are Chiribaya, against just a few Ilo-Tumilaca burials and surface sherds. One Chiribaya Alta male was important enough to be buried with two well-adorned women and large quantities of ceramics, textiles, metals, and other goods (Lozada 1998:170-172, 182-183; Lozada and Buikstra 2002:145-146).

The Ilo-Tumilaca/Cabuza immigrants came from the impressive Tiwanaku tradition but became a lower-status minority in the coastal valley. That neither group took a defensive stance would be paradoxical if they arrived at the same time, competing for resources. If, as the dates suggest, the Chiribaya already dominated the coastal Osmore, then the refugees may have fit into a social order that already controlled conflict, making defensible settlements unnecessary. Stein (1999:49) suggests that a relatively powerless foreign minority might be useful to a ruling class. The peaceful multiethnicity of the coastal Osmore may reflect such an accommodation of a diaspora community into a complex host society, and the defensible settlements in the upper Osmore and Carumas-Calacoa region may reflect the same diaspora into frontier territories with few occupants or minimal social hierarchy to control conflict.

Summary, Discussion, and Conclusions

The widespread traces of Tiwanaku-related occupation on the Pacific slope of the south-central Andes reflect a two-staged diaspora. The first stage was a colonial diaspora, in which a few clusters of settlers produced crops for the altiplano near Moquegua, probably the Cochabamba area, and

perhaps elsewhere. These colonists maintained material, centripetal links to the homeland through substantial flows of goods and possibly people and had peaceful but distant and minimal relations with their host populations. Around A.D. 1000, the Moquegua colony was abandoned in a drastic social upheaval, probably associated either with the violent collapse of the altiplano core or, if Kolata (2003) is correct, with a radical reorientation of the Tiwanaku state by an ascendant military elite. The trauma in Moquegua, and probably in the altiplano as well, spurred a second-stage victim/refugee diaspora of people from the former colony, if not also from the homeland. Many former colonists moved into new regions, expanding the geographic distribution of Tiwanaku-related traditions. Where the destination was sparsely populated, as in the upper Osmore drainage and the Carumas-Calacoa region, the refugees established small, competing farming communities in defensible sites. Where the destination area was occupied or quickly became so, as in the coastal Osmore, the refugees integrated into a complex host society as a lower-status minority group that maintained ideological, but probably not material, ties to the homeland and sharply distinguished itself from the dominant population while expressing coethnicity or lateral solidarity with fellow diaspora communities. This second-stage diaspora condition persisted, in the coastal Osmore at least, for several generations or more.

The tendency in recent discussions of Tiwanaku to focus on the well-documented peripheral colonies of Moquegua and arguably Cochabamba reflects not only the emphases of recent research but also the reality of Tiwanaku expansion. Most of the other Tiwanaku-related material on the Pacific slope of the Andes actually had little to do with the Tiwanaku state. Instead, it is the residue of the second-stage victim/refugee diaspora that occurred as the colony in Moquegua, and probably the entire Tiwanaku state, collapsed. The periphery that Tiwanaku exploited directly never reached the Pacific coast, and even in the middle elevations it was more spatially restricted and ecologically homogeneous than the wide distribution of Tiwanaku-related ceramics suggests. Tiwanaku's use of its periphery was less extensive and varied than that of the Inka or the Wari, whose influence reached the coast and touched more varied regions inland. Perhaps Tiwanaku did not require the same

quantity or diversity of inputs from the periphery as did the Wari and Inka. If so, Tiwanaku's domestic and political economy must have differed correspondingly in scale or organization. Alternatively, Tiwanaku's economic or political organization may have differed from Inka and Wari institutions in some way that made it less adaptable to extension over long distances.

Based on the evidence presented here, the Tiwanaku state did not fade away, dissolve into segments, or shed its periphery gradually. It blew apart, scattering former colonists beyond its periphery in a victim/refugee diaspora. The way that a polity collapses should tell us something about its organization. I suggest two possibilities. First, the unrest that drove the victim/refugee diaspora could have been caused by erupting conflicts between Tiwanaku colonists and others. Perhaps host populations like the Huaracane reasserted their sovereignty over their own territory, as Rex (1995) suggests may occur with host societies, or competing intrusive groups like the Wari on Cerro Baúl grew hostile. If so, then we should expect evidence of serious tensions between the Tiwanaku colonists and these other populations. We might also expect signs of a response from Tiwanaku, in defense of its beleaguered colonies whose products were presumably needed, perhaps more so than ever if the core was also struggling. The lack of defenses at Tiwanaku settlements in Moquegua makes extreme interethnic hostility seem unlikely. We need to establish conclusively whether either Wari or Huaracane populations were still present when Tiwanaku collapsed.

The second possibility is that the unrest that caused the victim/refugee diaspora came from within Tiwanaku itself. If it was not Huaracane or Wari people who destroyed the temple at Omo, ravaged the Chen Chen settlements, and drove many colonists away, then it must have been the colonists themselves. Tiwanaku may have had factional strife built into its very structure. The first-stage diaspora community in Moquegua included at least two distinguishable groups who lived in separate but adjacent settlements, one using Chen Chen-style ceramics and the temple at Omo, and the other using Omo-style ceramics and a similar temple at La Cantera (Owen 2001; Owen and Goldstein 2001). Tiwanaku itself was occupied by groups with distinct material cultures, probably

from different places (Janusek 1994, 2002, 2003 a). Blom et al. (1998) note bioarchaeological evidence for distinct populations within the Tiwanaku heartland, and Albarracín-Jordan (1996, 2003) and McAndrews et al. (1997) argue that the Tiwanaku heartland was composed of distinct but united sociopolitical units. Williams (2002) suggests that the Moquegua colonists were divided by water politics into upriver Wari allies and downriver Tiwanaku loyalists. The explosion of the Moquegua colony may have been the release of pressures among such constituent units that the distant and perhaps faltering Tiwanaku capital could no longer contain. Whatever the specific conflict, the post-colonial diaspora and the mode of collapse that it implies support the view of Tiwanaku as a polity composed of disparate parts, whose major task was to hold itself together despite the pressures building along its internal fault lines.

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Notes

1. All dates and ranges in this article are based on calibrations according to OxCal v3.5 (Ramsey 2000) using Stuiver et al.'s (1998) atmospheric calibration curve, with no southern hemisphere correction or phase modeling. Date

ranges are quoted at the 1σ confidence level; $\delta^{13}\text{C}$ corrections are included in conventional B.P. and cal A.D. dates when available.

2. Some of the published altiplano dates used here have been reported with different ID numbers or error estimates in different publications. In general, I use the recent tabulation by Janusek (2003b). For the Katari raised fields, I use the data originally reported by Binford et al. (1997:245) rather than the more recent Janusek and Kolata (2003:161), which identifies two samples with the same number. Although some of the following date variants have been published repeatedly, the correspondences listed here cover only a single instance to illustrate each variant. ETH 5639 in Janusek 2003b:36 is apparently the same as SMU-5639 in Ortloff and Kolata 1993:197. ETH 5640 in Janusek 2003b:36 is apparently the same as ETH-5680 in Kolata and Ortloff 1996:197. ETH

3179 in Janusek 2003b:39 has an error of ± 100 , but it has an error of ± 110 in Ortloff and Kolata 1993:197. Both of these variants appear to be the same as ETH 3174 in Bermann 1994:266, where it has an error of ± 80 . OS 2441 in Janusek and Kolata 2003:161 appears to be the same as OS 2541 in Binford et al. 1997:245. In the same two publications, respectively, OS 2562 seems to be OS 2652; OS 2650 seems to be OS 2558; OS 2561 seems to be OS 2650; OS 2558 seems to be OS 2758; and the OS 2566 given as 910 ± 30 seems to be OS 2561, whereas the other OS 2566 in Janusek and Kolata 2003:161 agrees with Binford et al. 1997:245. SMU 2473 in Janusek 2003b:36 has an error of ± 243 , whereas in Kolata 2003:189 the error is ± 210 .

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