Chapter 1

Social groups, Tiwanaku, and the coastal Osmore valley

The big events in human history and prehistory have been the formation and dissolution of large corporate groups of people. Innovations in subsistence, technology, and ideology have been important causes and effects in the history of human societies, but the most general of all measures of human events is the degree and manner in which people have formed groups. The growth, shrinking, unification, and division of social groups are ultimately what fascinate us in the historical processes that consistently engage the imagination, ranging from the rise of Dynastic Egypt to the fall of Rome, and the consolidation of the Inka empire to the collapse of the lowland Maya.

This dissertation proposes a general approach to visualizing the aggregation, separation, and interaction of people in groups such as ethnicities, chiefdoms, and states. These are groups that act corporately in certain circumstances, are relatively permanent, and typically mark their own social boundaries with symbols of group identity. The model attempts to link economic, political, and ecological concepts with psychological phenomena and ideology in a single graphical metaphor. Since all of these phenomena contribute to the processes of social change, we need such a synthetic way to visualize how this varied lot of factors interact to produce the ebbs and flows of human organization attested to by history and archaeology.

The model is not a predictive analog of some particular society. Instead, it makes explicit the general interrelationships of many widely used but disparate anthropological concepts that came into play as I tried to understand my archaeological fieldwork in the coastal Osmore valley, Perú (Owen 1991a,b,c, 1992a,b,c,d, 1993).
Consideration of this model leads to several general predictions or "effects," which are processes that are understandable in light of the model. The biological model of natural selection, for example, implies such effects as sexual selection and adaptive radiation. When an observed case seems to correspond to one of these effects, the case becomes understandable and it has been in some sense explained (see the "sample theories" of Boyd and Richerson 1985:24-29).

After a brief introduction to the geography, chronology, and culture history of Tiwanaku and the Osmore drainage that concludes the present chapter, Chapter 2 presents the general framework of the model. Each of the subsequent chapters focusses on one effect and shows how it helps to understand the events in one temporal phase of the Osmore drainage and the surrounding areas that affected it. The effects are presented in the chronological order of the phases to which they apply, simultaneously developing the model and building a coherent and (I hope) understandable culture history of the region based on published reports and new archaeological survey and excavation data collected for this dissertation. In the process, I will offer some insight not only into the model, but also into the specific case of the organization and collapse of the Tiwanaku state, and the repercussions of that collapse on the people of the coastal Osmore valley, just outside the western border of the defunct Tiwanaku sphere. The post-Tiwanaku period is interesting in its own right, as a dynamic time of migration and sociopolitical change, in which the nearly unpopulated coastal valley was settled by as many as five distinct groups, and eventually came to be dominated by a single increasingly populous and complex society now known as the Chiribaya. The subtext of this presentation is that Tiwanaku and the societies that followed are important, independent examples of human organization ranging from family to state levels, and that we are finally coming to
know enough about these cases to include them in comparative discussions of state collapse, chiefdom organization, and other theoretical issues.

**The geographic setting**

The coastal Osmore valley is an excellent test case for the group number model proposed here. The archaeological evidence suggests that the number of contemporaneous social groups in the valley has varied from one to as many as five or six. The extraordinary preservation of organic remains provides an unusually broad suite of characteristics that complement the ceramics for differentiating social groups, and allows for unusually complete documentation of subsistence practices and the clues to social organization found in distributions of grave goods. The valley is a well-defined, discrete study area bounded by deserts, so the analytical universe probably corresponds well to the arena in which the processes being studied originally took place. It is small enough that a single modest project could undertake all the necessary phases of research, from systematic survey, through small-scale excavations, to detailed lab analysis, and hope to gain a reasonably complete understanding of the culture history. Enough preliminary work had already been done on the ceramics in nearby regions, locations and characters of major sites, and logistical arrangements that this project could start up rapidly and expect good results.

The Osmore drainage is located on far south coast of Perú, where it serves as a traditional route from the highlands around Lake Titicaca to the Pacific coast (Figure 1-1). The drainage comprises several distinct sections (Figure 1-2). The upper section extends from the high, frigid altiplano puna grasslands over 4000 m above sea level (masl) down to the middle elevation yungas ("warm lands") beginning around 2000 masl. It includes several narrow, ramifying valleys with occasional irrigable slopes
Figure 1-1. The location of the Osmore drainage in the southern Andes.
Figure 1-2. Selected sites in the coastal and middle Osmore valley.
and arable valley bottoms. The middle section, from about 2000 to 1000 masl, forms the Osmore's largest concentration of farmland. The middle valley reaches from where the upper valleys begin to broaden out, past their confluence around the modern city of Moquegua, and down to where the river disappears into underground channels and the valley pinches off into a dry, rocky gorge. This uninhabitable section is about 25 km long, and isolates the middle valley from the coastal valley, where the river reappears at around 400 masl and the valley broadens slightly for the final 25 km to the sea (ONERN 1976; Rice 1989; Stanish and Rice 1989; Goldstein 1989a,b).

The coastal Osmore valley is narrow and deeply entrenched between steep walls. For the upper 10 km, the flood plain averages only 115 m across, opening up to just 300 m wide for the final 15 km to the sea. The coastal Osmore is a tiny valley even for Peru's far south coast; its entire length would fit in the width of a north coast valley like the Chicama. Most archaeological settlements are on quaternary river terraces above the valley bottom, while cemeteries are most often located in talus slopes. The environment today is extremely dry, with literally no vegetation outside the valley floor. The coastal Osmore river flows on the surface for only a few days or weeks each year, and modern agriculture is dependent upon water pumped from deep wells. Local farmers who were born and raised in the valley say that there was a significant wet season prior to about 1940, marked by persistent garua (heavy, wetting mist), tall seasonal stands of grass on the valley walls which are now barren, and bothersome infestations of flying insects. The abundant archaeological evidence and abandoned irrigation systems also suggest that much more water was available in the past, probably year-round.

At the inception of this research, three sites in the coastal Osmore valley were
Figure 1-3. El Algodonal, Loreto Viejo, Loreto Alto, and part of the field system.
thought to be associated with Tiwanaku. These sites, El Algodonal, Loreto Viejo, and Loreto Alto, were the focus of the excavations for this dissertation, conducted as the Proyecto Colonias Costeras de Tiwanaku (PCCT). Figure 1-3 shows the relationship of the three excavated sites and their association with a system of abandoned prehistoric fields and the canal that watered them.

**Previous research**

Gary Vescelius and several associates conducted surface collections and possibly excavations in the cemetery of Loreto Viejo around 1960 (Maximo Neira, pers. com.), and Vescelius, Rogger Ravines, and Hans Disselhof revisited the cemetery in 1965 to collect additional samples (Dauelsberg 1960a,b, 1973a,b; Disselhof 1967,1968; Geyh 1967; Mujica et al. 1983; Lumberras 1973). Although their work resulted in several widely cited radiocarbon dates, the cultural affiliations of the dates were vague, and no substantive reports were published. Vescelius and his colleagues in Peru and Chile identified the ceramics as a variant of the Tiwanaku style, and local archaeologists, especially in Chile, began to use the term "Loreto Viejo style" to describe coastal ceramics stylistically related to Tiwanaku (Focacci 1981; Muñoz 1981; Lumberras 1974; Rivera 1980; Santoro y Ulloa 1985).

The bulk of Vescelius's collections have been in storage since the early sixties at the Universidad Nacional de San Agustín in Arequipa. Unfortunately, all but five of the sherds with diagnostic forms or decoration have been removed from this collection. The five remaining diagnostics are consistent with the post-Tiwanaku Ilo-Tumilaca/Cabuza style (Appendix B), which PCCT did not encounter either on the surface or in limited excavations in the Loreto Viejo cemetery. The Ilo-Tumilaca/Cabuza component may have been completely removed by looters and/or
Vescelius (Owen 1992a). It is also possible that the site where Vescelius worked was actually the cemetery at El Algodonal about one km downstream, or the early ceramic terraces at Loreto Viejo, where there were evidently some heavily looted, intrusive Ilo-Tumilaca/Cabuza burials. Other than Vescelius's collections, no archaeological work had been done at Loreto Viejo, Loreto Alto, or El Algodonal prior to this project.

In the middle Osmore valley, sites related to Tiwanaku and the period following its collapse are more numerous and obvious. Pari (1980) excavated fourteen intact tombs at the site of Tumilaca, for which Bawden (1989b) provides a more general description. Based in part on Programa Contisuyu reconnaissance, Pari (1987) summarized the late Tiwanaku settlement pattern in the middle valley, and Garcia (1988) defined an immediately post-Tiwanaku ceramic style that he called Maria Cupina.

Twenty-five years after Vescelius' pioneering efforts, Paul Goldstein (1985, 1989a,b) synthesized the published results, major public and private collections mostly from looting and an unpublished Instituto Nacional de Cultura salvage project at the site of Chen Chen, and material from his own excavations at Omo to develop the best ceramic sequence available for Tiwanaku-related styles in the middle Osmore valley. He separates the Chen Chen phase, which corresponds roughly to Tiwanaku V (the last, "expansive" phase of the Tiwanaku state), from the subsequent Tumilaca phase. In Goldstein's somewhat speculative absolute dating, the Tumilaca phase falls around AD 900 to 1050; these dates have been substantially confirmed by my own work in the coastal Osmore. The Tumilaca phase is associated with the aftermath of the collapse of Tiwanaku, and is characterized by a patchy distribution of local variants within the middle valley that probably represents the division of the former Tiwanaku state into a
number of distinct, probably competing groups on the order of chiefdoms or the traditional Andean kin-based *allyu* groups. Ceramics of the Chen Chen and Tumilaca phases are similar, and have been lumped together in previous work. This oversimplification of the ceramic chronology accounts for the long-standing claim that there were Tiwanaku sites in the coastal Osmore (Mujica et al. 1983; Mujica 1985; Ponce 1981; Kolata 1983; Browman 1978; etc.). For the coastal valleys, the distinction is crucial to differentiating occupations associated with the Tiwanaku V state from those following its collapse.

A number of descriptive reports on Chiribaya phase cemeteries and settlements in the coastal and middle Osmore provide comparisons for the Chiribaya data collected by this project (Ghersi 1956; Jessup 1990a,b, 1991; Garcia 1988; Santos 1983; Belan 1981). Numerous studies on Tiwanaku and post-Tiwanaku material from the Arica area of northern Chile, while generally not oriented towards process and explanation, still provide important data on the settlement, subsistence, and organization of the southern reaches of Tiwanaku's pacific territory (Santoro 1980a,b; Berenguer et al. 1980; Muñoz and Focacci 1985; Daulesberg 1973b). Relevant sites and ceramics in the Arequipa area provide indications of the extent of post-Tiwanaku balkanization and locally increasing complexity to the north and inland of the coastal Osmore (Linares 1989; collections at Universidad Catolica Santa Maria, Arequipa).

**Definitions**

Some of the terms I will use in the overview of culture history and chronology of the area and throughout the remainder of this dissertation tend to be used differently by different authors. In order to avoid ambiguity, these terms are defined below.
A style (usually ceramic style) refers to a specific repertoire of motifs, rules for their combination and use, technical practices, and so on that were used to make artifacts that are recognizably similar to each other and different from those of other styles. Style is not limited to visible or intentional aspects of artifacts, and is not meant to imply anything about the social role of the artifacts or their decoration. I use style as a means of classifying objects in ways that, ideally, correspond to ways in which the objects' makers and users might have classified them. I will sometimes use a style name to refer to the group of people who are supposed to have made objects in the named style, or to a site they are supposed to have occupied. This usage is for convenience only; I am confident that the reader will understand that people and pots are not interchangeable.

A tradition is a broader categorization that includes one or more styles that are distinguishable but similar, typically either because the makers of the objects were in contact with each other or each other's artifacts, or because a style changed over time into a distinguishably different style without an abrupt break.

A phase, for the purposes of this dissertation, is exactly the same as a style. I use this term only because Jessup (1990a,b, 1991) named what I understand to be ceramic styles using the word phase, and I feel that his terms have taxonomic priority. Although I have used phase as a temporal term in other contexts (see Earle et al. 1987), phase has no temporal connotations here and is used only with Jessup's stylistic categories, as in "Algarrobal phase Chiribaya".

A period is a chronological unit theoretically definable in terms of radiocarbon years. Periods are rhetorically useful for labelling spans of time in discussions of
temporal change, but they oversimplify the archaeological record and should not be taken too seriously. My "early Late Intermediate Period," for example, is operationally defined by the presence of either of two ceramic styles that apparently did not appear or disappear at exactly the same time. This period labels a general block of time, but its exact beginning and ending dates are somewhat arbitrary, and specific sites or other data may be difficult or impossible to coordinate with the named period.

**Culture history and chronology overview**

Originating on the southern shores of Lake Titicaca as early as AD 100, Tiwanaku was one of the largest and longest-lived indigenous states in the New World. Both its expansion after about AD 400 and its decline around AD 1000 had repercussions throughout the south central Andes. During the Tiwanaku IV phase, from about AD 375 to 725, most of the monumental architecture and agricultural works around Tiwanaku's urban core were constructed. The state expanded to include most of the altiplano around Lake Titicaca (Kolata 1987), and small numbers of Tiwanaku IV people settled the middle Osmore valley in what is locally called the Omo phase (Goldstein 1985, 1989a,b). During the Tiwanaku V phase, which lasted from about AD 725 to 1000, the urban core of Tiwanaku reached an estimated population of 115,000 people (Kolata 1987, 1991). Around this time, in what is locally called the Chen Chen phase, the middle Osmore valley became a fully integrated and well populated province of Tiwanaku. Middle Osmore goods, both decorated and utilitarian, were uniformly of Tiwanaku style, and the valley focused on the central site of Omo, with its Tiwanaku-style ceremonial structure with cut stone facing and central monolith. A canal system and quantities of stone hoes suggest an emphasis on labor-
Figure 1-4. Sites with Tiwanaku artifacts (Ponce 1972; Mujica 1985; Goldstein 1989a,b).
intensive irrigation agriculture (Goldstein 1989a,b, 1991).

At their peak, Tiwanaku settlements reached down the eastern and western slopes of the Andes, trade goods were exchanged far south into modern Chile, and according to conventional reconstructions, a fringe of agricultural colonies dotted the coastal sections of the valleys of southernmost Peru and northernmost Chile, including the coastal Osmore (Figure 1-4) (Ponce 1981; Kolata 1987, 1988; Mujica 1985; Berenguer et al. 1980; Goldstein 1989a,b).

Results of the PCCT field research suggest that the conventional reconstruction is incorrect, at least for the coastal Osmore valley. PCCT systematically surveyed the entire coastal valley, excavated 140 m$^2$ in 27 areas in the habitation sectors of three sites that were thought to have Tiwanaku-related occupations, surface collected in two cemeteries thought to have Tiwanaku-related components, and excavated 101 m$^2$ in the two cemeteries. The methods and results of this fieldwork are detailed in the appendices. All this work produced little clear evidence of the Tiwanaku state in the coastal Osmore valley. Instead, the Tiwanaku-like sites seem to pertain to Goldstein's (1985, 1989a,b) subsequent Tumilaca phase, which is associated with the collapse of the Tiwanaku state. There were apparently no Tiwanaku state colonies in the coastal Osmore valley.

Prior to Tiwanaku's collapse, the coastal Osmore valley was lightly populated by village agriculturalists. These farmers were apparently outside both the Tiwanaku sociopolitical system and the Tiwanaku cultural tradition. Although the makers of Algodonal Early Ceramic style vessels may have been fairly numerous in the first centuries AD and possibly up to 7th century, survey and excavation data both suggest that their population had dwindled to near insignificance by the time BR Early
Ceramic style pots were in use, and probably up to the beginning of the Tumilaca phase (Owen 1993). I will often lump these two styles together as simply the Early Ceramic tradition, or refer to the time span in which they were made as the Early Ceramic period.

The decline of Tiwanaku is poorly understood, but by the end of Tiwanaku V, the administrative sites that once controlled the raised fields in the Titicaca basin had been abandoned (Kolata 1983, 1991; Graffam 1992). Albarracin-Jordan and Matthews (1990) think that the Tiwanaku V ceramic style persisted about 100 years after the state collapsed. In the middle Osmore, the Chen Chen (local Tiwanaku V) phase ended around AD 900 or 950. The temple at Omo had already been abandoned and its cut facing stones scattered. Chen Chen phase habitation sites were systematically dug up and reduced to "pitted stone piles". This massive, selective destruction makes no sense as looting, but instead suggests some dramatic upheaval associated with the decline of the Tiwanaku state (see Goldstein 1989a; Moseley et al. 1991).

These events opened the Tumilaca phase, lasting from AD 900 or 950 to about AD 1050. The middle valley broke up into isolated or competitive sub regions, each with its own variant of the old ceramic style. Two of the premier Tiwanaku icons, the front-face deity and the eagle, disappeared from the artistic repertoire, suggesting a loss of Tiwanaku state ideology. No principal site replaced the former center at Omo, and canals irrigating some of the valley bottom were abandoned. Population shifted into the upper Osmore (Bermann et al. 1989; Stanish 1985, 1992; Watanabe and Stanish 1990), and, for the first time, settlers moved down into the coastal Osmore valley (Owen 1991, 1992a,b).

This time period in the coastal Osmore valley is marked by what I call the Ilo-
Figure 1.5: Stylistic and chronological periods. Calibration of calendar dates, years AD.
Tumilaca style of pottery. The Ilo-Tumilaca style, lasting from about AD 950 to 1050, is almost identical to the Tumilaca style in Moquegua, and represents the early stage of the Ilo-Tumilaca/Cabuza tradition. The Ilo-Cabuza style is the late stage, lasting from about AD 1000 to 1250. Unfortunately, it is difficult to separate Ilo-Tumilaca from Ilo-Cabuza occupations based on small surface collections, so I will generally lump the two together. The ceramic chronology and absolute dating are summarized in Figure 1-5 and described in detail in appendices B and C.

The Ilo-Tumilaca/Cabuza settlement of the coastal Osmore was clearly intrusive, with very close ties to the Tumilaca phase in the middle valley, and no local antecedents whatsoever. This intrusive settlement from the middle valley comprised at least 11 habitation sites and at least 9 cemeteries. PCCT excavated Tumilaca phase habitation areas at Loreto Alto and El Algodonal, and a cemetery at El Algodonal. At the supposed Tiwanaku colony of Loreto Viejo, the minimal Ilo-Tumilaca/Cabuza material suggests nothing more than a small number of looted tombs.

At about the same time as the Ilo-Tumilaca/Cabuza settlers were occupying the coastal valley, a separate, distinctly non-Tiwanaku group known as the Chiribaya (Ghersi 1956; Jessup 1990a,b, 1991; Garcia 1988; Santos 1983; Belan 1981; etc.) appeared in the valley. There were contemporary Chiribaya sites in the middle valley and in coastal valleys as far south as Azapa, and there was no local antecedent in the coastal Osmore, so the Chiribaya were probably intrusive settlers, too. The Chiribaya occupation of the coastal valley started with an early (Algarrobal) phase that lasted from about AD 970 to 1130, and continued through a late (post-Algarrobal) phase that lasted from about AD 1070 to 1370 (Jessup 1990a,b, 1991) (see appendices B and C).

Chiribaya sites are ubiquitous in the coastal Osmore valley, totaling at least 28
habitation sites and 21 cemeteries, generally with much deeper, denser cultural deposits than Ilo-Tumilaca/Cabuza sites. PCCT excavated Chiribaya habitation areas at Loreto Viejo and El Algodonal, a small cemetery sample at Loreto Viejo, and a small number of Chiribaya tombs scattered around the habitation area of El Algodonal. A much larger sample of coastal Osmore Chiribaya material has been recovered by Jessup's mostly mortuary excavations at San Geronimo (Jessup 1990a), his still unpublished domestic excavations at Chiribaya Baja, and Buikstra's Chiribaya Project mortuary excavations at Chiribaya Alta and Chiribaya Baja (Lozada et al 1991). Although I had the privilege of seeing much of this work in progress and my ideas about Chiribaya society are informed by these field and lab impressions, few of the results other than Jessup's ceramic sequence (Jessup 1990b, 1991) are available yet for formal comparisons.

In addition to the Ilo-Tumilaca/Cabuza and Chiribaya styles, at least three other contemporary, apparently local styles have been identified in the coastal Osmore. Ilo Multicolor and Osmore Multicolor are variants of the Algarrobal phase Chiribaya style (Jessup 1990b, 1991), while the third style is a variant of Ilo-Tumilaca recognized only in surface material at a single looted cemetery during the PCCT survey. I call this the Viborás style, after the quebrada where the cemetery is located. All three of these minor styles are relatively rare and appear to be contemporary with the early phases of the Chiribaya and Ilo-Tumilaca/Cabuza traditions. By the late phases, only the two major traditions remain in the valley.

As time passed, the Ilo-Tumilaca/Cabuza population seems to have declined, and their social organization may have become simpler. At the same time, the Chiribaya population grew to unprecedented size and they elaborated a large, walled central site
now called Chiribaya Alta. The Chiribaya material culture grew increasingly elaborate, craft specialization and social stratification apparently increased, and powerful, wealthy leaders arose in what must have become one or more chiefdoms at a level of sociopolitical complexity previously unknown on the coast. The Ilo-Tumilaca/Cabuza tradition eventually disappeared, leaving the Chiribaya in sole possession of the valley.

The Chiribaya persisted for another century or so until disappearing in turn, apparently after a disastrous flood and enormous mud slides wiped out much of the agricultural system and many habitation sites (Moseley 1990; Moseley et al 1992; Moseley and Tapia 1991; Satterlee 1991, 1992). This dissertation does not examine the subsequent periods, but there seems to have been minimal occupation of the valley after the end of the Chiribaya. A few coastal valley sites were used by people with the late prehistoric to early colonial Estuquiña style of pottery, which is better known from the middle and upper Osmore drainage (Stanish 1991, 1992a; Lozada 1987). The date at which the Estuquiña style appeared in the coastal Osmore valley is unknown, but the focus of the coastal Estuquiña population was clearly the coastline north and south of the mouth of the river. A few anomalous burials with provincial Inka ceramics (Reycraft pers. com.; Jessup pers. com.) indicate some contact with the Inka state, but there was no substantial Inka population or construction in the coastal Osmore valley or the adjoining coastline.

In order to simplify discussion of chronological changes, I will sometimes divide this culture history into four rough temporal periods (Figure 1-5). The Early Ceramic period encompasses the entire time from the adoption of ceramics until the appearance of the Ilo-Tumilaca style, which dates this long period to about 100 BC to AD 950.
The early Late Intermediate Period is characterized by the presence of Ilo-Tumilaca and Algarrobal phase Chiribaya ceramics, running roughly AD 950 to 1075. The middle Late Intermediate Period is defined by the presence of Post-Algarrobal phase Chiribaya and Ilo-Cabuza style pottery, from about AD 1075 to 1250, and the late Late Intermediate Period includes Post-Algarrobal phase Chiribaya but no Ilo-Cabuza ceramics, from AD 1250 on to the appearance of Estuquiña and Inka wares, which are not well dated or discussed here.