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EVIDENCE FOR PRECERAMIC HOUSES AND HOUSEHOLD ORGANIZATION IN WESTERN SOUTH AMERICA

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Introduction

This paper summarizes information concerning preceramic houses known from excavated sites in Ecuador, Peru, and Chile (Figure 1), and it presents evidence for household organization during the Preceramic Period. The introduction reviews concepts important to the paper; the second section provides the data base from Ecuador, including a detailed report of an Early Preceramic house excavated by Stothert; the third and fourth sections provide discussions of the basic data from Peru and Chile; and finally the development of domestic architecture and community organization in the Preceramic Period is discussed and summarized.

In an effort to illuminate preceramic society and culture, we seek to discover the nature of the household. Wilk and Rathje (1982: 618) define "household" as "the most common social component of subsistence, the smallest and most abundant activity group." This definition emphasizes the role that the household plays in economic activities. As such, their study of households encompasses (1) the household as a social or demographic unit characteristic of the archaeological sites studied (that is, the actual people involved in productive activities); (2) the material accouterments of their activities, including houses, activity areas, materials, tools and so forth; and (3) the behavioral elements, especially the activities performed by this social group (*ibid.*).

However, there are key limitations to inferring the composition of households and their activity patterns from the material record. First, there is no necessary correspondence between a particular house and a household because one household may occupy several dwellings or several households may share a single dwelling. Also, regrettably, many excavators have described preceramic houses but have not included the associated features and refuse. We lack an understanding of what Flannery (1983: 45) calls the "household unit", that is, a domestic structure plus associated features, which is a more meaningful archaeological unit than the "house" taken by itself. Where household units have been described, it is easier to draw inferences about social units, their economic activities and other behaviors. Finally, in order to describe households, as defined by Wilk and Rathje, one must have data from extensive excavations. Regrettably, the evidence is usually inadequate to reconstruct in detail preceramic subsistence patterns and other economic activities.

Because of these limitations, we follow Kramer (1982: 673) in defining the household as "a group occupying a bounded residential space." With this definition, the emphasis is shifted to identifying the social unit occupying the bounded residential space (*i.e.*, the house), and we avoid identifying the basic unit of subsistence. Once the social unit occupying the house has been identified, then statements can be made concerning whether it *is* the basic unit of subsistence. This two-fold approach to identifying the household is used in the following sections.

In our review of preceramic sites we have not found descriptions of household units suitable for comparison, so it has been necessary to take the relative sizes and shapes of dwellings as a principal basis for interpretation. One assumption that we use is that house size is generally correlated with the size of the social group which inhabits it. While this correlation is by no means perfect, we feel that it does reflect the overall relative size of the social unit involved.

One factor that apparently influences both house size and the size of the associated social unit is subsistence activity. According to Naroll (1962), families in Neolithic societies used about 10 m² per person of floor space, while the hunting and gathering !Kung San nuclear families occupy shelters

with less than 4.9 m² total area (Lee 1984: 32). This suggests that sedentary groups use larger house structures than mobile ones.

In a seminal article concerning the sociopolitical ramifications of house form, Flannery (1972: 29) notes that circular dwellings tend to correlate with nomadic societies whose social organization shares many characteristics with hunter/gatherers. Important aspects of hunter/gatherer organization include economies based on reciprocity, relatively high mobility, and a weakly developed sense of territoriality (Lee and DeVore 1968). In such societies, circular huts are generally used by a single person or a few people for resting and sleeping only (Flannery 1972: 30ff), while food preparation and most other activities are carried out communally in the space between the huts.

In this paper, we find support for the interpretation that small, round domestic structures are evidence of social groups that are relatively egalitarian and whose economic activities are organized communally, that is, with emphasis on cooperation and sharing. Furthermore, we interpret the appearance of rectangular domestic structures in western South America as associated with the socio-cultural development of the household (in Kramer's sense) as the basic unit of subsistence. Here our findings are similar to those of Flannery (1972: 29), who has interpreted rectangular dwellings as manifestations of a fully sedentary way of life, correlated with the development and maintenance of permanent facilities and the establishment of hereditary ownership over limited areas with high resource potential (such as arable land or areas suitable for irrigation).

In this paper we have interpreted the transformation of domestic architecture in each region as correlated with sociocultural development. The details of local change, or in some cases the lack of change, are treated in the text.

Ecuador

Cubilán

In the southern highlands, at an altitude of 3100 m above sea level, is the open-air site of Cubilán where Temme (1982) found stone tools and charcoal in shallow but stratified contexts dating between 7100 and 8500 B.C. (uncorrected). In one section of the site (Cu 27) she identified a lithic workshop and activity areas, and in another section (Cu 26) she found agglomerations of artifacts where projectile points were manufactured, other artifacts were finished, and where activities such as cutting and scraping took place. The concentration of charcoal in discrete patches in this section suggested hearths arranged roughly in a line. Temme believes that these remains represent a camp. No post holes were found, but she suggests that the fireplaces might correspond to a single large shelter or several small ones.

The apparent organization of the site and the discrete activity areas indicate that a small, closely-knit group camped there briefly. This contrasts with the roughly contemporary Las Vegas habitation site.

Las Vegas

On the coast, the Las Vegas preceramic culture has been reconstructed from artifacts, burials, settlement data, faunal remains, wood charcoal, pollen, and phytoliths dating to an early phase, 8000 to 6000 B.C., and a later phase, 6000 to 4600 B.C. (Stothert 1985, 1988). The Las Vegas people were unspecialized hunters, fishermen, and gatherers who added plant cultivation to their subsistence system before 8000 years ago (6000 B.C.).

Evidence of a Las Vegas structure was found under an intact deposit of midden soil about 70 cm in depth. Although not visibly stratified, the midden apparently accumulated regularly because the radiocarbon dates from superimposed artificial strata were in chronological order. Although living floors were not identified except at the base of the midden, a discontinuous shell layer (the probable result of one episode of erosion, perhaps the action of a single rain storm on an exposed, sloping

surface containing *Anadara* shells) was traced across several excavation sections; while not well-defined, this marker corresponds to a genuine stratigraphic discontinuity indicated by the large samples of faunal remains from above and below the marker which showed change in subsistence between the earlier and later occupation of the site.

Stothert's intention in excavating the Las Vegas type site (OGSE-80), was to focus on residential units and activity areas, but scraping and brushing large horizontal areas revealed few features. Even burial pits, which occurred frequently in the midden, could not be distinguished in the homogeneous midden soil above sterile. Mapping the location of every artifact was not a successful strategy in this excavation either, because artifact density was extremely low and because most diagnostic artifacts occurred in burials and were not abandoned in stratified deposits. This excavation of midden deposits did not reveal evidence of dwellings, living floors or activity areas because of the ancient pattern of habitation and of rubbish disposal, to be discussed below.

Feature 63 is the wall trench of a Las Vegas structure which has been interpreted as a shelter. It was identified because the ancient people excavated a narrow, circular trench to a depth of 10 to 25 cm into the compact sand underlying the midden and back-filled it with midden soil (Figures 2, 3). This trench would have been suitable for supporting the wall poles of a structure about 150-180 cm in diameter. An interruption of the trench in the northeast side may correspond to the doorway. Because the wind never blows from the northeast on the Santa Elena Peninsula, but can blow strongly and coldly from other directions, especially the west, it is reasonable to interpret this feature as corresponding to the wall of a circular shelter.

This interpretation is somewhat confused by the presence of a deeper pit in the interior of the shelter, surrounding a pedestal of sterile, compact sand upon which rested the skeleton of a mature female associated with a quartzite cobble (Figure 2). The pit contained the same midden soil and refuse found in the wall trench and in the overlying archaeological deposits. It would seem likely that the pit and the burial were made at the same time, but their relationship to the wall trench is unclear. It is possible that Feature 63 was a specialized burial feature, or that the dwelling was abandoned when the burial was made.

Feature 63 and the associated deep midden level can be dated in two ways. Organic material from the pit within the trench gave a radiocarbon age of 9550 ± 120 B.P. (7600 B.C.; Tx-3316, uncorrected), but this is not necessarily the age of the burial or the structure. A series of four dates from the overlying midden range from 5200 to 6860 B.C. (Stothert 1985, table 1). These suggest that the shelter was built and abandoned before 6860 B.C. A hearth adjacent to Feature 63 gave a date of 8920 ± 120 radiocarbon years or 6970 B.C. (Tx-4460). This date is similar to the 6860 B.C. date given above as a probable terminal date for the use of the shelter.

The interpretation of Feature 63 as a domestic dwelling is supported by several associations (Figure 2). An apparent hearth containing animal bones, shell and shell artifacts, and fire-altered rock was located about 2 m away from the entrance of the shelter. This feature lay just above sterile sand.

At the same stratigraphic level, or within 10 cm of the sterile sand, were two naturally flat stone artifacts, suitable for grinding small quantities of food, minerals, or medicinal plants. These artifacts, and another small hammerstone, were abandoned and apparently covered with soil early in the occupation of the site when little top soil or midden was present.

Several small pits which also were intrusive into the yellow sand were associated with the shelter (Figure 2). It was not possible to determine from which stratigraphic level these pits originally were excavated, and their contents have not been dated. Their association with Feature 63 is supported by the fact that pits are not common in the site, but were only found in two clusters. The largest pit outside of the shelter had a diameter of 40 to 65 cm (Figure 2) and held a grinding stone about 14 cm in diameter and 5 cm thick. This andesite artifact was one of the most carefully finished

of all the Las Vegas artifacts, having two well-smoothed faces and a neatly pecked perimeter. The other pits also contained midden soil and refuse. No pit outside the shelter exceeded 20 cm in depth.

This group of features, covering about 20 m², offers us a view of the minimum domestic space of one Las Vegas household early in the occupational history of the site. In an effort to locate comparable living areas, close attention was paid to the interface between the midden deposits and the compact, sterile sand over extensive areas of the site. In one area, about 20 to 25 m west of Feature 63, the underlying sand was darkened with scattered charcoal. While neither hearths nor vestiges of a shelter were present, a cluster of pits covering about 20 m² was found: this is evidence of another zone of domestic activity (Stothert 1988), but it may or may not have been contemporary with Feature 63.

More evidence of Las Vegas structures comes from three massive secondary burials dated to the end of the Las Vegas Period, around 4750 B.C. These ossuaries were round in outline (Figure 4) and measured 150 to 225 cm in diameter, suggesting that the bones might have been arranged within structures, possibly abandoned dwellings like the one already described. Their size is very similar to the Las Vegas dwelling dated 2000 years earlier, but the ossuaries were arranged in a line with only 50 to 100 cm of space between them (Stothert 1985: 627, figure 9).

The Las Vegas shelters probably were easily erected and did not endure more than a few seasons. It seems likely that the locations of shelters and hearths at a place like Site 80 shifted frequently, resulting in the accumulation of an apparently homogenized midden.

In summary, the Las Vegas people, who inhabited Site 80 and other small camps for more than 3000 years, were healthy and their way of life, centered on broad-spectrum hunting, fishing, collecting, and horticulture, was very durable. Considerable social continuity and stability in the local group was indicated by the orderly condition of the cemetery at Site 80 and by the deep midden there.

While in residence at Site 80, the people engaged in a variety of activities that included the preparation of plant and animal foods, the manufacture and maintenance of tools and artifacts, temporary food storage, personal decoration, curing, and burial. Midden accumulated in the form of numerous, overlapping toss zones, each of which may have had a hearth or shelter at its center, but these were frequently abandoned and the walls dismantled, leaving no compacted living floors or identifiable structures in the midden.

The group that inhabited Site 80 may have consisted of a few people flexibly organized for carrying out a wide variety of subsistence tasks using a few generalized tools and facilities. The small Las Vegas shelters were designed for only a small number of people, leading one to suppose that the nuclear family may have been an important unit of production, distribution, and consumption in Vegas times. Given the mosaic of resources available at every known Las Vegas site, and given the nature of the Las Vegas subsistence and technology, it seems likely that families and individuals moved from camp to camp, depending on local conditions and personal preferences, without overriding economic constraints. One can imagine that the nuclear family/household might have been a discrete unit within the community, relatively independent of other similarly constituted units, except for the customary obligations of reciprocity. In the central portion of site 80, many tombs were excavated (Stothert 1985, 1988), but no clear clustering of burials was identified. Subsequent excavations by Stothert revealed two clusters of burials at the eroded periphery of Site 80, which is weak evidence for discrete family groups within the Vegas community.

The Vegas people were under some pressure to increase their economic productivity, or at least there were incentives to do so. By Late Las Vegas times, they had increased their dependence on fishing, were taking a broader range of shellfish species, and had added primitive maize to the list of plants they exploited (Stothert 1985: 632). This evolution in the subsistence system surely occurred in tandem with some social changes for which there is little evidence; however, the intensified use

of the cemetery at Site 80 late in the Las Vegas Period is suggestive of the growing social importance of that site. The two facts, that Site 80 is the largest known Las Vegas site and the only one where burials were found, together suggest that this site had special ceremonial functions and played a special role in the integration of the local group.

If we accept the three circular ossuaries as evidence of structures built as dwellings and later reused for burials, then the Late Las Vegas Period houses and household organization may be interpreted as very similar to that of Early Las Vegas Period in terms of architecture and floor space. However, one wonders if the closely packed, linear arrangement of the three later structures (ossuaries) might not indicate the development of a more integrated settlement, pointing to the direction of the structured villages of the subsequent Valdivia Period.

Valdivia house and household

The transition between the Las Vegas and Valdivia phases has not been documented. There is a break in the archaeological sequence of the coast of Ecuador between 4700 B.C. and perhaps 3500 B.C. (uncorrected radiocarbon dates), at which time the pottery-using Valdivia people appeared in small communities along the littoral and in the tropical valleys of the coast. There is excellent, phase by phase, description and interpretation of the evolution of Valdivia society and culture, including domestic architecture and households (Damp 1979, 1982, 1985; Lathrap *et al.* 1975; Lathrap *et al.* 1977; Zeidler 1984). There was a dramatic transformation in Valdivia domestic architecture and in the composition of households between 3500 and 2800 B.C. Because this period corresponds to the Late Preceramic Period in Peru, the evidence for Valdivia house/household evolution will be reviewed here.

The Valdivians have been interpreted as intensive agriculturalists. The Valdivia Phase I (and II) settlements (3500-2800 B.C.) consisted of groups of small, oval or circular domestic dwellings arranged in the form of a ring around an open plaza area. The earliest Valdivia dwellings known from Loma Alta and Real Alto have been described in detail by Damp (1979, 1982, 1985). These were like the Las Vegas structure described above, only slightly larger in size (Table 1). The community probably consisted of an aggregate of nuclear families (Damp 1979: 66-67). The burial practices of the early Valdivians were very similar to, but slightly more elaborate than, those of the Las Vegas. Because of the formal organization of these early Valdivia villages, and because of their more elaborate techno-material adaptation, we suspect that these Valdivians experienced more social, ceremonial and economic integration than the earlier Las Vegas people.

There is evidence for dramatic development in the Valdivia way of life shortly after 2800 B.C. Zeidler (1984) has shown that by Phase III the composition of the family had evolved, domestic functions had increased in number, new patterns of authority and ideology had emerged, and productive activities had been reorganized. Although Valdivia houses continued to be circular or oval throughout the period, the domestic structures of Phases III-VI were significantly larger than earlier structures (Table 1), and more substantial. Zeidler (1984: 69 and chapter 3) believes that they probably were occupied by multi-family or extended family groups which more efficiently carried out certain subsistence activities.

The transformation of Valdivia houses and households was a part of the emergence of progressively greater social and economic complexity in the Valdivia Period, which involved new patterns of authority (minimal chiefdom), a new community structure involving a large U-shaped settlement with at least two ceremonial structures (Marcos 1978), and a reorganization of productive activities (Zeidler 1984).

This transformation of Valdivia domestic architecture and household organization may correspond to the development of an enduring or climax ecological and sociocultural adaptation in coastal Ecuador (Stothert 1992 [this volume]). Further significant evolution in the area of domestic

Table 1. Las Vegas and Valdivia Phase house data (from Stothert 1988; Damp 1982, 1985; and Zeidler 1984: tables 2 and 3).

Houses Arranged in Chronological Order	Provenience	Dimensions in meters	Floor Area ^a in m ²
Early Las Vegas	Feature 63	1.5 x 1.8	2.7
Late Las Vegas (ossuaries)	Feature 25A	2.0 x 1.5	3.0
	Feature 25B	1.6 x 1.4	2.24
	Feature 34	2.25 x 2.11	4.75
Valdivia I	Real Alto 2-77	4.5 x 3.2	14.4
Valdivia I-II	Loma Alta St. 2	3.1 x 2.3	7.13
Valdivia III	Structure 1	11.5 x 8.5	63.28
	Structure 2	10.85 x 8.34	44.73
	Structure 10	8.55 x 7.4	35.65
	Structure 20	12.44 x 9.7	68.37
	Structure 28	9.7 x 8.7	57.62
	Structure 29	10.6 x 9.05	42.98
	Structure 40	9.25 X 7.00	41.04
Valdivia IV-VI	Sample of 7 structures range in floor area from 40.53-69.45 m ²		

^a The floor areas of the Las Vegas and Valdivia I-II structures were calculated by multiplying the maximum lengths by the maximum widths, which gives an inflated estimate of the actual floor areas of these circular to oval dwellings. The Valdivia III, IV, V, and VI houses were measured with a sonic digitizer utilizing the Interactive Planimetry Program of the Department of Geography, University of Illinois (Zeidler 1984: 653, note 4), and the floor areas given here should be quite accurate.

architecture and household organization may not have occurred until after 1000 A.D., when rectangular structures appeared in Manteño-Huancavilca cultural contexts.

While the climax socio-cultural adaptation in coastal Ecuador may have been established early, the case was very different in Peru.

Peru

Early Preceramic Period (pre-5000 B.C.)

The earliest house remains in Peru come from the lowest levels of Tres Ventanas Cave 1, located in the upper reaches of the Chilca River (Engel 1970, 1984). Engel notes the presence of a circular hut, 1.5 m in diameter (described as 2 m in the 1970 article), on the sterile layer overlying bedrock in the cave. Willow posts and a door frame similar to those from later structures lower down in the Chilca drainage (see below) were identified. Food remains included marine shellfish, tubers, and animal bones. An uncharred sample from the structure was dated to 8080 B.C.; however, a second radiocarbon date of 6190 B.C. was obtained from the same level outside the structure (Engel 1984: 16). Unfortunately, no other information has been published on this site, which was apparently destroyed by looters subsequent to the initial testing which identified the house (Engel 1970: 56). Another circular hut with a diameter of 1.5 m was reported from the lowest levels of Quiqche cave, located near Tres Ventanas (Engel 1984: 16). A radiocarbon date for this level is reported as 7990 B.C.

While other Early Preceramic Period sites with architecture have been reported (Engel 1966, 1973, 1981, 1987), detailed descriptions of these sites are lacking. Engel (1966: 31) reports the presence of a village site in Paracas (14A-VI-96) which dates to 6880 B.C. This village is composed of circular huts arranged around a larger central house. He notes that the village is composed of agglomerations of huts 5-6 m in diameter, but he says nothing about the nature of the agglomerations nor if excavations confirmed the sizes of the huts. At least three villages in the Chilca Quebrada and one in the Lurín Valley are said to be similar. All have huts measuring about 2.5 m in diameter (Engel 1973: 274), although some larger ones are mentioned, but not discussed (Engel 1987: 16). These sites date between 7700-5020 B.C. (Engel 1966: 77-78, 1973: 274).

Late Preceramic Period (5000-1750 B.C.)

A considerably greater number of sites with architecture date to this period, due in part to the excellent preservation along the Pacific coast of South America. It is apparent that during this period sedentary occupations based on the collection of marine resources (Moseley 1975) and agricultural products (Benfer 1984; Pozorski and Pozorski, cited in Lynch 1986: 174; Raymond 1981) became much more common. With the shift to a sedentary way of life, the energy costs of building dwellings was offset by the greater length of occupation in them, thus warranting the construction effort.

Site 514, in Paracas, was a village of circular huts dating between 4000-3000 B.C. (Engel 1981: 33). The huts varied in size between 4-11 m in diameter, but otherwise were similar in form, associated features, and artifacts to the earlier houses at site 14A-VI-96, which is located nearby (described above). The associated features included storage pits and caches, located both inside and outside the huts, and what Engel calls *silos* (subsidiary annexes to the house for storage). Engel (*ibid.*: 38) notes that cooking hearths, differentiated from fireplaces for heating by the presence of food remains in them, were found outside the huts, while fireplaces were found inside.

The best described evidence for a house in preceramic Peru is known from the site of Chilca I. The site itself consists of numerous small, circular, semisubterranean dwellings which had an estimated population of 100 families (Donnan 1964; Engel 1966). The community plan of this village and the spacing of the huts are both unreported.

One of the houses excavated by Donnan (1964) was approximately 2.5 m in diameter and dug 35 cm into the subsoil. Cane formed the framework, which was covered by *junco* grass. The form and construction techniques were similar to the earlier village huts described above by Engel. Apparently the house was used only for sleeping and resting, because no hearth and few artifacts were found within. Seven burials, five males and two females, varying in age from 18 to 40, were placed on the floor of the house immediately prior to its abandonment. The house was then pulled down over the burials. Donnan (*ibid.*: 143) suggests that these people all died within a short period of time, perhaps by plague or poison, and thus were interred together. Whether they were actually related is uncertain. The house dates to 3420 B.C.

Approximately four kilometers from the Chilca I site is the large preceramic site of Paloma (Benfer 1984; Engel 1980; Quilter 1981, 1989). This site is important to our understanding of the variability present along the coast of Peru during this period because it is larger than other sites, shows evidence of being occupied for long periods of time if not permanently, and has been the subject of detailed studies of its occupants (Benfer 1984, 1986, 1990; Quilter 1989).

Forty-two houses were found in an excavation of one-tenth of the site area, suggesting the possibility of the presence of over 400 houses (Quilter 1989: 19); however, Quilter believes that this number is probably too large. No organized pattern is evident at the site.

The houses at Paloma are of two types. The more common, later houses (dating between 5050-3250 B.C.) range in shape from circular to ovoid to quadrilateral and average approximately 10.9 m² in floor area (Quilter 1989: 14-16). The floors were dug approximately 25 cm into refuse and sloped toward the center, giving a sublenticular-shaped profile. A ring of post holes was identified around the perimeter of the floor. Often a second, but incomplete, ring of postholes was found outside the first. This double wall may have created either a storage area or additional protection against damp winter breezes (*ibid.*: 17-18). Quilter's descriptions suggest that the roof and wall construction was similar to the house at Chilca I, although Engel (1980: 107) proposes that the roofs may have been flat, not conical.

The earlier houses at Paloma, dating prior to 5050 B.C., are approximately the same size as the later ones (10.8 m²) and were constructed either on culturally sterile ground or in natural depressions (Engel 1980: 107-108; Quilter 1989: 18). Quilter (*ibid.*) suggests that these structures were occupied for briefer periods of time.

The implication of these data from Paloma is that house and household size and shape remained relatively stable over this period, although the houses may have been occupied for increasingly longer periods through time. In addition, both types of houses were associated with cooking hearths containing ash and animal bones and found outside the huts, as well as with simple fireplaces lacking animal remains and found within the huts. Also associated with the houses were stone tools, including *batanes*, or grinding stones, pebbles used as grinders, crushing tools ("Paloma crushers"), and a few knives or projectile points as well as fishhooks of *Prosopis* spines. The *batanes* are found within the houses.

Investigations by Quilter (1989) indicate that burials at Paloma were found both inside and outside the houses, the former being more typical. A common pattern was to inter an adult male in the center of the house and females and children around the perimeter. Less common was the interment of both an adult male and female in the center. In other cases, burials were found outside the houses (Engel 1980). On the basis of the evidence recovered, Quilter (1989) suggests that the household unit was a nuclear family or perhaps a small, extended family, and that this was the basic social component of subsistence.

A site of roughly contemporary age is Rio Grande de Nazca (Engel 1964). At this site, an unspecified number of small, oblong windbreaks were constructed, ranging between 4 m² and 1.56 m² in floor area. These dwellings were made of large posts supporting a straw mat roof, and

apparently they had open sides, suggesting a temporary lean-to, rather than a permanent dwelling. Only a few beans and microliths were found inside, suggesting most domestic activities took place outside. Burials were found nearby in trenches.

The majority of the house remains from Peru date to the Cotton Preceramic Period, 2500-1750 B.C. During this period, architecture appeared all along the coast from the Chicama Valley in the north to the Paracas Peninsula in the south. Interestingly, no structures dating to this period have been identified south of Paracas. This is probably due to the lack of archeological work there, because contemporary house remains are known in northern Chile (see below).

The site of Asia located in the Omas Valley south of Chilca was partially excavated by Engel (1963), who described a preceramic or aceramic architectural feature (Unit 1) which dated to 1350 B.C. The feature is a stone- and adobe-walled surface structure composed of several rooms all enclosed by a wall. The structure is rectangular, measuring 12 x 12.5 m, and apparently was rebuilt several times. Abundant domestic refuse was encountered in the excavation, suggesting that a wide variety of activities were conducted in the house, including eating, sleeping, and perhaps textile manufacture. Cooking must have been done outside, as no hearths were identified inside the house. The structure had 150 m² of floor area and could have accommodated an extended family. Forty burials were encountered in the subsoil below the house.

Engel (1963: 19) notes that the site of Asia is composed of many refuse-covered hummocks similar to the one in which Unit 1 was located. He also indicates that refuse is relatively scarce between hummocks, perhaps indicating that these dwellings were the residences of social groups whose activities were spatially segregated, not shared, with comparable groups in houses nearby. Alternatively, communal sharing *did* go on between the residents of these houses, but the areas were deliberately kept clean.

In addition, Unit 1 was built on top of a refuse heap which included several huts. If one assumes that the huts were circular, and this is usually Engel's meaning, then it may indicate directly a shift from circular to rectangular houses during the Cotton Preceramic Period. We shall return to this point in the following discussion.

From the Central Coast northward at least to the Casma Valley, Cotton Preceramic sites frequently include ceremonial structures as well as domestic dwellings. At El Paraíso, located in the Chillón Valley, eleven platforms are present, at least three of which are composed of conjoined rooms (Quilter 1985; Willey 1971). Artifactual and architectural evidence indicate that a variety of activities, both ceremonial and domestic, was carried out at these platforms (Quilter 1985: 285). Quilter (personal communication, 1989) notes that it is uncertain whether domestic dwellings exist at the site, thus, it remains an open question whether there was a resident population at El Paraíso, and if so, what its nature was. It is important to note, however, that the structures excavated at El Paraíso are complexes of *rectangular rooms*.

At Río Seco, located along the coast north of the Chancay Valley, a series of isolated groups of houses were found associated with two artificial platforms composed of in-filled multi-room houses (Wendt 1964; Willey 1971: 97). The house groups are described as clusters of quadrangular rooms and patios joined by walls composed of large stone blocks (Engel 1958: 24). While dimensions are not given, Willey (1971: 97) suggests that the houses could have accommodated eight to ten people. As at Asia Unit 1, the walls have a rubble and clay core and are faced on both surfaces with clay. The houses are also constructed on refuse. In contrast to Asia Unit 1, refuse covers the area between houses at Río Seco, suggesting the possibility of common utilization of areas between houses.

Aspero, a contemporary site located in the Supe Valley, is best known for its large-scale ceremonial architecture but it also includes domestic structures (Feldman 1977). Moseley (1975: 82) describes these structures as subterranean or semi-subterranean, rectangular and 2-3 m on a side. As

at Río Seco, a thick midden layer covers the site (*ibid.*: 81) which either has not been, or cannot be, associated with individual houses.

The site of Culebras in the dry Culebras Valley south of Casma is a relatively large aggregation of house remains and burials on artificially constructed terraces (Engel 1957). The rectangular houses are small, being roughly 1.5 to 3 m on a side. Willey (1971: 96) mentions that they are semisubterranean, although Engel does not say so. Lumbreras (1974: 43) also notes that some walls have plaster and that there is evidence of sequential occupations of the houses. It is clear from the refuse found inside the structures that at least some domestic activities were conducted there (Engel 1957: 66). Burials were found outside the dwellings in a separate cemetery nearby.

The site of Los Chinos or Los Chimus (Proulx 1973) is located in the Nepeña Valley and is reported to have subterranean houses (Lumbreras 1974: 43). These are rectangular or circular and average 1.5 by 1.8 m in size (or about 2.7 m² in area). Both individual houses and complexes of dwellings were identified, although the complexes were not described. At both Culebras and Los Chinos the social units that occupied the houses were small, consisting of individuals or nuclear families. As at Río Seco, substantial refuse is present, scattered over the site, but whether the refuse is associated with particular houses is uncertain.

No discussion of preceramic architecture would be complete without a description of the Huaca Prieta and Huaca Negra sites, located in the Chicama and Virú Valleys respectively (Bird 1948; Bird *et al.* 1985). Both sites are large, with population estimates for Huaca Prieta running into the hundreds (Willey 1971: 94). Houses at both sites were originally described as semisubterranean, oval to rectangular, with one or two rooms and hard clay floors. However, in the final report (Bird *et al.* 1985), the houses are described as subterranean. House walls at Huaca Prieta are made of beach cobbles set in mortar made from midden and sea water (Bird 1948: 23). Because of the lack of stone at Huaca Negra, the houses there are of rectangular adobes. The houses at these sites are estimated to be about 12 m² in floor area, and thus could only have housed a small group of people, probably a nuclear family.

Evidence for preceramic architecture in the highlands during this period is extremely sparse. Remains of what have been interpreted as circular huts are present at Pachamachay, located on the Puna of Junín (Rick 1980). While the majority of these structures were erected later than 4000 B.C., one structure, Feature 75-24, dates to about 4500 B.C. This feature consists of 14 postholes encircling a dark soil stain roughly 2.5-3 m in diameter (*ibid.*: 86). It is suggested by the author that this feature was a structure composed of perishable materials with a superstructure of posts covered with thatch or animal hides. A higher density of tools was found within the feature than without, suggesting that domestic activities were conducted inside the structure.

The composition of the social unit which occupied this structure is unknown, but the size of the dwelling suggests that only a few people could have lived there. The size and hypothesized construction techniques of the dwelling conform to ethnographic accounts of !Kung San houses, which are used by a nuclear family (Lee 1984). On this basis, it is possible that a similar social unit occupied the Pachamachay structure.

Also at Pachamachay, a circular structure measuring three meters in diameter was dated around 1750 B.C. The structure was similar to the earlier house, but perhaps was larger. Two hearths as well as bone-filled pits and grinding stones were found within the house (Rick 1980: 83-84). As with the earlier structure, it can be inferred that the nuclear family was the social unit occupying it.

The Ayacucho-Huanta Archaeological-Botanical Project found evidence of preceramic architecture and terracing during the Cachi Phase (3100-1750 B.C.). Circular houses or huts outlined by rocks were present (MacNeish *et al.* 1983: 12) but neither the quantity of huts nor their dimensions are reported.

La Galgada in the Tablachaca drainage (Grieder *et al.* 1988) dates between 3000-1500 B.C. and has some houses and associated refuse, but the focus of excavations was on the ceremonial architecture at the site. Hence, the domestic remains are not described in detail. Four excavated houses all had round-to-oval forms and averaged about 14 m² of floor area. Only the stone foundations remain, but the investigators suggest that the superstructure was of pole and thatch (*ibid.*: 19). Ash was found within the houses, although only one hearth was excavated, suggesting that some fire was used inside the houses, either for cooking or for heat. Areas of ash deposits were also found outside the houses, suggesting that cooking may also have been done outside. In general, the forms of the houses are more similar to modern highland houses than to the coastal houses described for Chilca (*ibid.*).

Discussion

Table 2 provides a summary of the preceramic evidence discussed thus far from Peru. These data show the apparent shift through time from circular dwellings to quadrangular ones.

All of the pre-2500 B.C. sites are characterized by circular structures, although Paloma also had some quadrilateral houses. The pre-2500 B.C. sites range in size between 1.65 and 11 m in diameter with floor areas ranging from 2.14 to 95 m². However, discounting sites 14A-VI-96 and -514, which are only briefly described by their investigator, the floor areas are reduced to between 1.56-14 m². Clearly, the early Andean houses were generally too small for any but a few people, probably a few individuals or a nuclear family. This fits the !Kung San house pattern more closely than the Neolithic pattern.

By analogy, we have interpreted the Early Preceramic Period settlements discussed thus far as occupied by bands of related individuals, much like the !Kung San. Food probably was shared among families, and the basic division of labor was along lines of age and sex. The group occupying each house during this time period was probably an individual or nuclear family. The household as a discrete social unit of subsistence within the band (or even within the family) probably did not exist. The functions of the household were fulfilled by work groups of fluctuating membership, drawn from the larger social unit which consisted of all the residents of the settlements.

At Paloma, Quilter (1989) suggests that the household was the basic unit of subsistence. However, he suggests that the household was composed of only a nuclear family or small extended family. This early shift may have been due to the increased permanence of this site (see below).

If we accept that architectural forms are manifestations of social and political organization (Flannery 1972: 47), then these data indicate that many of the preceramic sites were occupied by groups with similar customs and organization. For example, with the exception of Pachamachay, the evidence indicates that most activities, in particular food preparation, were conducted outside the dwelling, in areas probably shared with others. This suggests that generalized reciprocity was practiced by these preceramic individuals and families.

High mobility was not necessarily a characteristic of the occupants of all the sites in our sample. Pachamachay, Paloma, and Chilca were all interpreted as being permanent settlements, at least for part of the year (Benfer 1984; Engel 1966; Rick 1980). However, while these sites may have been occupied for all or most of the year, it is likely that individual members of the local band came and went relatively frequently, to visit relatives or to seek preferred food items elsewhere, and so forth. Such fluid membership is typical of hunter/gatherer groups, and it is a social pattern that is difficult or impossible to recognize archaeologically (Lee and DeVore 1968; Yellen and Harpending 1972). Nonetheless, support for this suggestion comes from Paloma where the analysis of dental traits suggests that biological distances between the earlier and later burials is too large to be explained by *in situ* change (Benfer 1984: 533). This could be interpreted as indicating the addition of individuals from outside the settlement through time.

Table 2. Preceramic house data from Peru.

Site	House Shape	Area/House (m ²)	Age (B.C.)	Altitude (masl)
Tres Ventanas, Quiqche	Circular	1.77	8080; 7990	3600
Paracas (14A-VI-96)	Circular	19.6-28.3	6880	<500
Chilca-Lurín sites	Circular	4.90 ^a	7750-5220	<500
Paracas (14A-VI-514)	Circular	12.6-95	4000-3000	<500
Chilca Village 1	Circular	4.90	3420	<500
La Paloma earlier houses	Circular	10.8	>5050	200
later houses	Circular-ovoid- quadrilateral	10.9	5050-3250	200
Pachamachay	Circular	5.90	4550	4300
Ayacucho sites	Circular	?	3100-1750	2500-3400
La Galgada	Circular to ovoid	14	3000-1500	1000
Río Grande de Nazca	Semicircular	1.56-4 ^b	pre-2500	<500
Pachamachay	Circular	7.16	1750	4300
Los Chinos	Circular, quadrangular	2.7	Cotton Preceramic	<100
Huaca Prieta	Oval, quadrang- ular	2.8-8.3	Cotton Preceramic	<50
Huaca Negra	Oval, quadrang- ular	?	Cotton Preceramic	<50
Asia	Quadrangular	150	Cotton Preceramic	<100
Río Seco	Quadrangular	?	Cotton Preceramic	<500
Culebras	Quadrangular	2.25-9	Cotton Preceramic	<100

^a Assumed similarity to Paracas houses.^b Assuming half of full circular size of 2 x 2 meters.

Evidence from the Cotton Preceramic sites in Peru suggests that larger rectangular dwellings replaced the earlier circular ones (Table 2). The basic dwelling may have increased in size in order to accommodate a larger household. While some sites such as Los Chinos and Culebras were not much larger than earlier ones, and while they had small houses with only one or two rooms, other sites such as Asia and Río Seco were much larger and had multi-roomed dwellings. Using Naroll's (1962) formula, the latter could have housed extended families. Of course extended households may have occupied several adjacent structures at the sites with smaller houses, but we lack evidence of discrete clusters of dwellings at these sites.

It is interesting to note that the houses at La Galgada, in the highlands, dating to between 3000-1500 B.C., are still round to oval, but much larger (14 m²) than earlier houses, suggesting an increase in the size of the group living in the house. The same is also seen at the 1750 B.C. house at Pachamachay. This *could* support the suggestion that the shift to larger social units began during the Late Preceramic Period in both the highlands and on the coast.

Flannery (1972: 29) has suggested that rectangular dwellings are generally associated with fully sedentary societies which are organized to own and exploit limited areas with high resource potential. Indeed, in Peru, rectangular houses appear first at sites where sedentism was underwritten by the intensive exploitation of marine resources, which, according to some, was the foundation of civilization on the coast of Peru (Moseley 1975; see also Moseley 1992 [this volume]).

The dramatic increase in population that occurred during the Cotton Preceramic Period (Patterson 1971) correlates with the development of a maritime adaptation and the shift to rectangular dwellings. Patterson (1983: 33) notes that residential groups (which are not necessarily equivalent to households as used here) along the Central Coast doubled or tripled in size during the Cotton Preceramic Period, as reflected in the increased size in serving vessels. This population growth may have resulted in increased competition for areas with high resource potential. In such situations, there may have been strong pressure to establish ownership or control over valuable lands or stretches of shore. Larger, more stable households may have emerged because they had the competitive advantages over smaller ones under these conditions of competition.

One of the most important characteristics of a rectangular house is that it is easier to add or subtract rooms, thus expanding households can be more easily accommodated (Flannery 1972: 28). With population increasing quickly during the Cotton Preceramic Period, such a house might have been more advantageous. Thus, population growth, combined with the shift to the household as the basic unit of production, together help account for the switch from circular to rectangular houses.

A potentially important source of information about this shift is the use of areas between houses. Is it significant that the spaces between houses at Asia are relatively debris-free, while in other areas, such as Río Seco and Culebras, refuse fills the space between houses? Does this reflect situations in which production/consumption is localized within households at Asia but shared between households at Río Seco and Culebras? Unfortunately, the excavation records at these sites are insufficient to allow us to evaluate these possibilities.

Netting (1969; cited in Wilk and Rathje 1982) notes that as agricultural intensification occurs, the function of the household changes from scheduling labor to transmitting land rights over time. Flannery (1972: 29) suggests that as permanent settlements developed near localized resource areas, group ideology changed from one of weak territoriality to one of more strongly-defended core areas around these resources. This change was further emphasized by concepts of descent, such as burials beneath house floors. In coastal Peru, this process may have occurred as people intensified the exploitation of marine resources which, as Moseley (1975) has pointed out, are often localized, especially productive shellfish beds. Support for a growing importance of territoriality comes from the evidence that houses were rebuilt frequently on the same location at many of the Cotton

Preceramic sites. In addition, burials under the floors are evident at Asia, again suggesting growing emphasis on the transmission of ownership in family lines.

It is interesting to note that subfloor burials are also present at the earlier sites of Paloma and Chilca, which have circular houses. This suggests that the concept of the transmission of resource ownership may have been developing there already. Paloma's ideal location at the juncture of three major resource zones could account for this development.

In summary, the evidence presented here suggests that the household had become the basic unit of subsistence during the Cotton Preceramic Period. It was also larger, and there was a potential for the unequal accumulation of resources among households. Production was increasing due to more intensive exploitation of agricultural and maritime resources, and this process was accompanied by growing social differentiation. The appearance of monumental architecture (Feldman 1980; Moseley 1975) may indicate that ranked societies were emerging during this period. We believe that growing social differentiation was related to the shift away from communal sharing of resources and toward household production and accumulation. This shift may be reflected in the appearance of quadrangular house forms in the Cotton Preceramic Period.

Chile

Much of the extensive evidence concerning preceramic house and household organization in Chile is published in Chilean journals, but recent summaries by Santoro and Núñez (1987), Núñez (1983), and Kolata (1983) have made the information more accessible to North American scholars.

The earliest evidence in Chile, and in South America, comes from the Monte Verde site, which is located along a tributary of the Maullín River in southern Chile, and which dates to around 11,000 B.C. (Dillehay 1984, 1985, 1989). Partial excavation of the site uncovered the remains of 11 or 12 dwellings composed of a foundation of small logs and tree limbs held in place by stakes. The author suggests that a superstructure of saplings was covered with skins to provide shelter in the cool temperatures typical of the region. The dwellings were rectangular and vary in size from 3 x 3 m to 4 x 4.4 meters. Shallow pits lined with clay, interpreted as braziers for warming the houses and possibly food, were found in most dwellings, along with plant remains and stone tools. Cooking was apparently done outside in two large hearths located in central positions (Dillehay 1989: 12).

In addition to the dwellings, a "wishbone"-shaped structure was unearthed in the eastern part of the site, spatially segregated from the dwellings. This structure measured 3.9 x 3 meters. Inside it were found clay-lined hearths and remains of plants. Some of the species identified are still used medicinally by inhabitants of the local area (Dillehay 1984: 108). A special function for this structure was inferred from the fact that virtually all of the complex stone tools, exotic stone types, and mastodon bone found at the site were recovered in association with this structure.

Because the site was only partially excavated, it is impossible to estimate the size of the settlement, but Dillehay asserts that the site was integrated both spatially and functionally, reflecting an occupation by a single group during the Late Pleistocene. It is uncertain whether the site was occupied by sedentary or semi-sedentary people.

In addition to the architectural features, four activity areas consisting of spatially discrete concentrations of wood, bone, and stone tools were found near the "wishbone"-shaped structure (Dillehay 1989: 13). While such activity areas are a common feature of Pleistocene hunter/gatherer sites, their presence in association with structures where domestic and nondomestic activities were carried out is unique in the New World.

Questions have been raised about the existence of dwellings at Monte Verde. Lynch (1990, 1991) has expressed doubts that the arrangements of logs interpreted as structures are indeed dwellings, suggesting that they may be fortuitous patterns of fallen logs. If this were the case, then

the site would conform more closely to the pattern of Late Pleistocene and Early Holocene sites such as Tagua Tagua (Montané 1968).

All the rest of the evidence for preceramic architecture in Chile comes from the Arid North zone between 17° 30' and 27° S, that is, from the Peruvian border to the Copiapó River (Núñez 1983; Santoro and Núñez 1987). Sites with habitation structures fall into two major time periods: 7800-4100 B.C. for sites in the Tiliviche, Tarapacá, and Camarones Quebradas, and 3430-1675 B.C. for sites located in middle to higher elevations around the Salar de Atacama and the upper Loa River. These groups are not only temporally distinct, but also reflect adaptations to different ecological situations (Núñez 1983). Despite the differences, the architectural remains are fundamentally similar, suggesting similarities in the social units involved.

Sites of the Tiliviche complex have been found 40 km inland along the south side of the quebrada of the same name. The sites are dated between 7800-4100 B.C. and include "habitations in slight depressions with roofs supported by posts" (Núñez 1983: 183). While the hut shapes are not given, they may be semicircular or circular, judging from Núñez's descriptions of other structures. Interestingly, fifty-eight percent of the food remains was from the ocean. Whether this reflects seasonal movement to the west, or trade with coastal groups, is uncertain.

Tarapacá 14A, located approximately 70 km inland also includes semisubterranean habitations of oval shape (True *et al.* 1970). No house counts or house sizes were given, but the authors noted that the sites "represent small groups of shallow house pits" (*ibid.*: 179). The houses include a central hearth and a variety of artifacts, such as milling stones, indicating that domestic activities were conducted inside the habitations. The site was occupied between 4880 and 2830 B.C.

Pit houses are noted for the Camarones River, north of the Tiliviche and Tarapacá Quebradas. These sites are linked to the ones in the latter areas by similarities in artifacts and the use of posts for roof support (Núñez 1983: 185). Dates for the Camarones 14 site are approximately 4650 B.C.

On the basis of the evidence just presented, Núñez (1983: 196ff) suggests that the inhabitants of the sites in the period between about 7600 and 5500 B.C. participated in a seasonal round that included interior and coastal locations. Subsequent to this, settlements along the shoreline became more permanent as exploitation of coastal resources became more efficient. This sedentism, however, was not reflected in significant architectural changes.

As the shift from coastal-inland transhumance to permanent shoreline occupation was occurring in the coastal lowlands of northern Chile, a different pattern was evolving in the zone above 2000 m in the Atacama region. Between 4000 and 3250 B.C., clusters of subterranean pit houses appeared in the middle Loa River Valley. These villages were linked to *puna* sites higher up (Núñez 1983: 195). The house and village sizes were not reported, but sites apparently were occupied seasonally, not permanently.

Between 3250 and 1600 B.C., a greater variety of habitats was being exploited by groups now living in circular semisubterranean structures with walls composed of large slabs of rock placed vertically (Núñez 1983: 176). Storage pits were found inside the houses, although most debris and milling stones were found outside. Generally these sites were seasonally occupied, although some, like Tulán 52, were situated in locations which permitted year-round occupation (*ibid.*: 178).

Similar structures composed of slab walls are found at Puripica at an altitude of 3200 meters. Sites of the Chiu Chiu complex located along the middle Loa River at altitudes of 2300 m are inferred to be components of the same transhumant pattern that included Puripica (Núñez 1983: 181).

Another possible node in the same transhumant pattern is suggested by the remains from Caleta Huelén 42, located at the mouth of the Loa River (Zlater 1983). Thirty semisubterranean, semicircular dwellings with walls composed of rock slabs arranged vertically were found on the surface, overlying an estimated 70 earlier, subterranean structures. The contemporary sites of Tulán

52, Puripica, Chiu Chiu and Caleta Huelén 42 share similar house structures, and the coastal site shows evidence of the use of vicuña hides and quinoa, indicating that there was contact among the groups which inhabited these sites (Núñez 1983: 186).

The semicircular houses at Caleta Huelén 42 average about 2.2 m in diameter and are found in clusters, each with approximately seven houses arranged around a central patio (Zlater 1983: 24). The excavator suggests that most activities were conducted in the patios outside the houses. Cooking was done at hearths located behind the houses. The excavator indicates that the dwellings were not abandoned after burials were placed under the house floors (*ibid.*: 22).

Discussion

The evidence from Chile, while not as complete as that from Peru, indicates that similar processes were involved in the development of settlements with architecture. This evidence is summarized in Table 3. Unfortunately, floor area cannot be included in this table due to a lack of data. Houses appeared as early in Chile as in Peru, earlier if Monte Verde is included, and the general sizes of both the houses and villages appear to be equivalent in both regions, at least in the early periods. In Chile, there were less dramatic changes in architecture through time. For example, Early Ceramic Period houses and structures retained the semicircular shape of the earlier houses (Kolata 1983: 275) rather than shifting to a rectangular shape.

The one substantial development in Chile appears to be a shift from subterranean pit houses to semisubterranean dwellings through time. Almost all the sites with architecture dating before 3000 B.C. have subterranean houses. All the later ones appear to be semisubterranean. For example, at Caleta Huelén 42 semisubterranean dwellings replace earlier, subterranean ones. What this architectural evidence tells us about the groups involved is uncertain.

It is also evident that fully sedentary settlements were a later development in Chile and were not necessarily linked to the appearance of more substantial architecture. It is clear from the deep middens at sites such as Quiani and Punta Pichalo (Bird 1943) that groups were settled for long periods of time without the benefits of permanent houses, and it is also obvious that groups leading a transhumant way of life occasionally built fairly ample dwellings. There are apparently other factors which explain why dwellings were used in some areas and not others.

It is also difficult to identify what social group occupied the structures present because we lack information on house size. If the sizes were on the order of the ones at Caleta Huelén 42, or approximately 3.8 m², then we must be dealing with individuals or nuclear families. From the clustering of houses at Caleta Huelén 42, we may infer the presence of several families operating together in subsistence activities. In all likelihood, the household was composed of extended families or kin groups. The presence of several of these clusters at Caleta Huelén 42 may thus reflect the existence of several distinct family groups living and working together. This clustering is not reported as present at the earlier sites in Chile, and thus may reflect the development of such groupings out of an earlier, simpler social organization, such as that inferred for sites like Tiliviche, Tarapacá, and Camarones. Socially, the clusters of houses at Caleta Huelén 42 may reflect an intermediate step in the transition from an economy based on communal sharing and reciprocity towards one in which the household is the basic unit of subsistence.

Another difference between the Chilean and Peruvian sites is the lack of burials within structures in Chile, a pattern repeated at every site except Caleta Huelén 42. This pattern may reflect relatively undeveloped concepts of land ownership in Chile. This would certainly be consonant with the seminomadic existence inferred for these groups. The Caleta Huelén evidence again may point to the beginnings of ideas of private ownership of land or resources, associated with the development of households as discrete units of subsistence.

Table 3. Chilean preceramic house data.

Site	House Shape	Age (B.C.)	Altitude (masl)
Monte Verde	Rectangular, Surface	11,000	50
Tiliviche	Circular (?)	7800-4100	950
Tarapacá	Circular, Semisubter.	4800-2830	1400
Camarones	Circular, Subter.	4650	35
Isla Grande	Circular, Subter.	3430	2300-2500
Tambillo	Circular (?)	3170	2500
Puripica	Circular, Semisubter.	2850-2050	3200
Caleta Huelén 42	Circular, Semisubter. ^a	2850-1830	26
Chiu Chiu	Circular, Semiubter.	2715-1675	2300
Tulán 52	Circular, Semisubter.	2350	2925

^a Stratified above subterranean houses.

Comparisons and conclusions

It is instructive to compare the information on preceramic houses and households from several regions in order to model the more general processes of cultural evolution that are manifest in the early archeological record from western South America.

Prior to about 3000 B.C., the organization of the populations living throughout western South America was very similar. Aggregations of small, circular houses were present during this time from Ecuador to Chile, although rectangular ones were apparently used at Monte Verde. The similarities in layout (where known), refuse deposition, and hearth and artifact distributions suggest that the household was not the basic social unit of subsistence at any of these sites, including Monte Verde. The basic unit of production and consumption was probably a work group of fluid membership, drawn from all the nuclear families in the settlement. There was probably considerable reciprocity among families, reflected in the presence of activity areas between structures rather than within them. In certain places, such as Paloma in Central Peru, however, discrete households may already have become the basic unit of society. This is perhaps due to the more permanent nature of the Paloma settlement.

After 3000 B.C., different developmental trajectories were followed in Ecuador, Peru, and Chile. In Ecuador, house size and durability as well as community size and structure developed dramatically in the period 3500-2800 B.C., as the ceramic-bearing, agricultural Valdivians expanded to occupy more and more densely the coastal valleys of Ecuador. Discrete households, made up of extended family groups, may have been integrated into village life by more elaborate rituals and by emergent patterns of authority. Ceremonial architecture, in the style of the modern tropical forest cultures of South America, appeared at Real Alto in this period. It is interesting that many researchers, in an effort to interpret the Valdivia culture and society, have sought ethnographic models among modern horticultural peoples of the tropical forest area of South America (Lathrap *et al.* 1975; Lathrap *et al.* 1977; Zeidler 1984). They affirm that the complex sociocultural tradition extant among tropical forest peoples had already developed in Valdivia times.

The evidence for Peru in this period suggests that new patterns of authority and more elaborate forms of social organization were present on the coast. Large scale construction (public architecture) appeared on the Central Coast by 2500 B.C. Unfortunately, archaeological investigations have concentrated on the large monuments at the expense of the associated domestic architecture, with the result that little is known of the household organization in this period. In some areas, such as Asia and Río Seco, the household may have become the basic unit of production and consumption: this is indicated by the appearance of quadrangular, multi-room dwellings. In other areas, such as Culebras and Los Chinos, it is likely that the earlier, more communal organization was maintained, although it is conceivable that discrete households were dispersed among several small houses, rather than being located in one large one.

In Chile, the scant evidence suggests that the unit of production and consumption remained the suprahousehold group. Fully sedentary villages with architecture only appeared after about 1000 B.C., along with agriculture, but even then, the presence of clusters of semicircular houses suggests that the shift to the household as the primary unit of production and consumption had yet to be completed.

Finally, what factors were involved in the shift from a communal way of life to one based on household production and consumption? Why was this shift earlier in Ecuador than in Peru, and still later in Chile? The evidence from the coast of Ecuador shows that several factors together contributed to the transformation of the Valdivia way of life in the period 3500-2800 B.C. These include intensification of agricultural and fishing technologies, population growth and settlement expansion, increase in the size of the domestic unit, increase in the number of domestic activities, development of strongly integrated communities, and the appearance of ceremonial architecture. It is widely

thought that many features of modern ethnographic tropical forest cultures developed in this period (Lathrap *et al.* 1975; Lathrap *et al.* 1977; Stothert 1985, 1988; Zeidler 1984). In effect, a kind of climax social and ecological adaptation was innovated some five millennia ago (Stothert 1992 [this volume]), and it has been so successful and stable that some forms of it have persisted among peoples of South America until the present.

In coastal Peru during the Late Preceramic Period an emphasis on maritime and horticultural resources resulted in both a rapid increase in coastal population and increased sedentism. These are suggested as the major factors which lead to the shift to the household as the basic unit of production and consumption.

In Chile, Late Preceramic Period peoples did not experience as much sociocultural intensification as those in Peru, and the people in Chile remained stable at a lower level of sociopolitical integration. They were supported by a successful way of life that had been established millennia earlier and which persisted. Certainly, environmental factors such as the limited expandability of the hunting and collecting pattern in northern Chile help to explain the continuation of seasonal transhumance into the Early Ceramic Period, and to account for the simpler social organization present there. In Chile, the shift to larger households and to different patterns of consumption and production was delayed until the introduction of a more stable agricultural way of life sometime after 1000 B.C.

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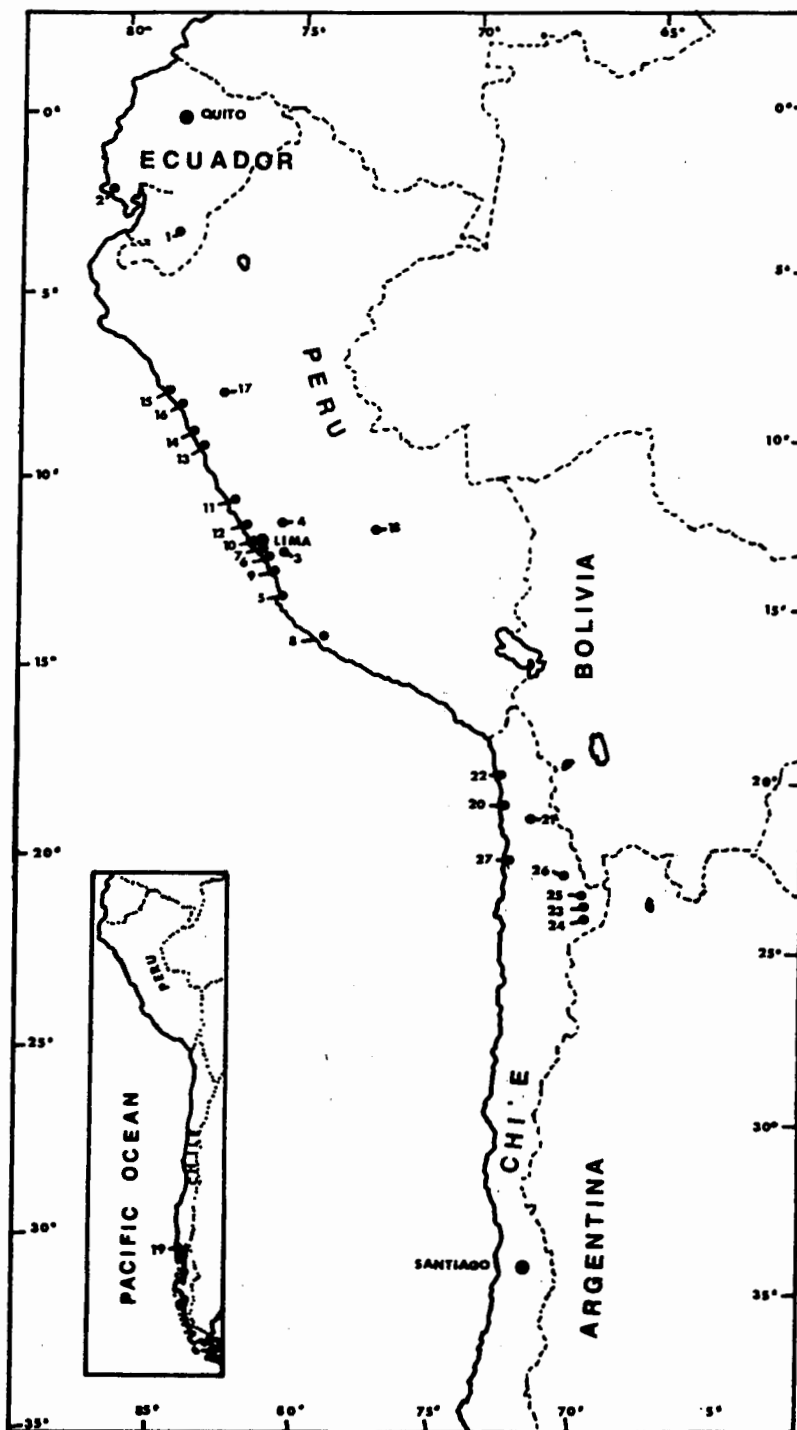


Figure 1. Map of western South America, showing the Preceramic Period sites discussed in the text. **KEY:** 1. Cubilán; 2. Las Vegas; 3. Tres Ventanas; 4. Pachamachay; 5. Paracas Village; 6. Chilca Quebrada: Chilca I, Paloma; 7. Lurín Valley; 8. Río Grande de Nazca; 9. Asia; 10. El Paraíso; 11. Aspero; 12. Río Seco; 13. Culebras; 14. Los Chinos; 15. Huaca Prieta; 16. Huaca Negra; 17. La Galgada; 18. Ayacucho-Huanta; 19. Monte Verde; 20. Tiliviche Quebrada; 21. Tarapacá Quebrada; 22. Camarones Quebrada; 23. Salar de Atacama; 24. Tulán 52; 25. Puripica; 26. Chiu Chiu; 27. Caleta Huelén 42.

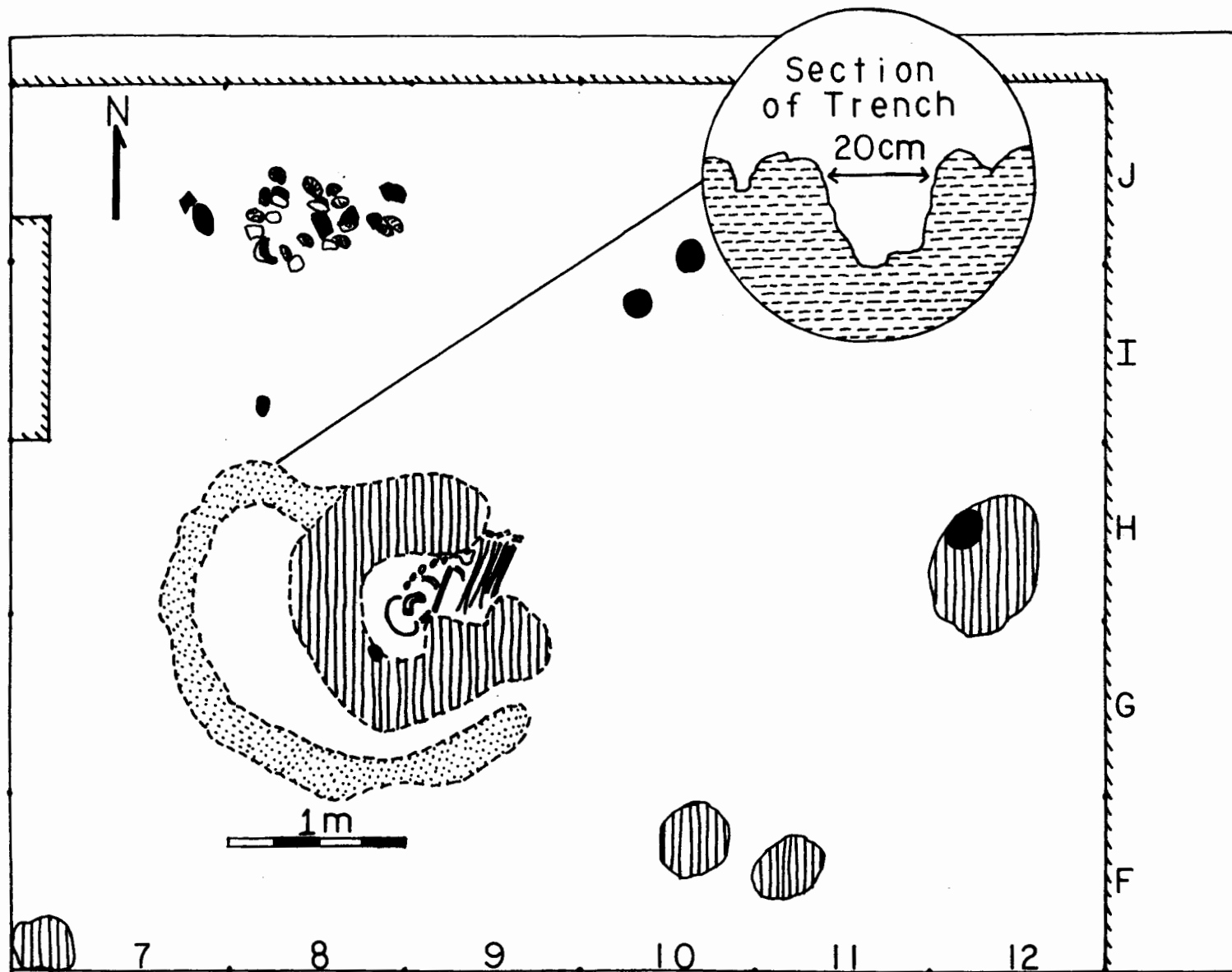


Figure 2. Plan of Cut F-J/7-11 at Las Vegas Site 80, excavated to the 130 cm level, showing a hearth and shell concentration (Feature 62) in section J/8; the wall trench, pit and burial which make up Feature 63 in sections G-H/8-9; a series of round pits; and large stone artifacts (in black) found *in situ*. The stippled area shows excavations between 10 and 20 cm into sterile sand, and the vertical hatching shows excavations between 20 and 40 cm into sterile sand.



Figure 3. Excavation F-H/8-11 at Las Vegas Site 80 cleared at the 130 cm level, showing the wall trench of a Las Vegas dwelling (Feature 63). The stakes do *not* indicate post holes. The maze effect was caused by root penetration. The hearth or shell concentration (Feature 62) and several large stone artifacts are shown *in situ*.

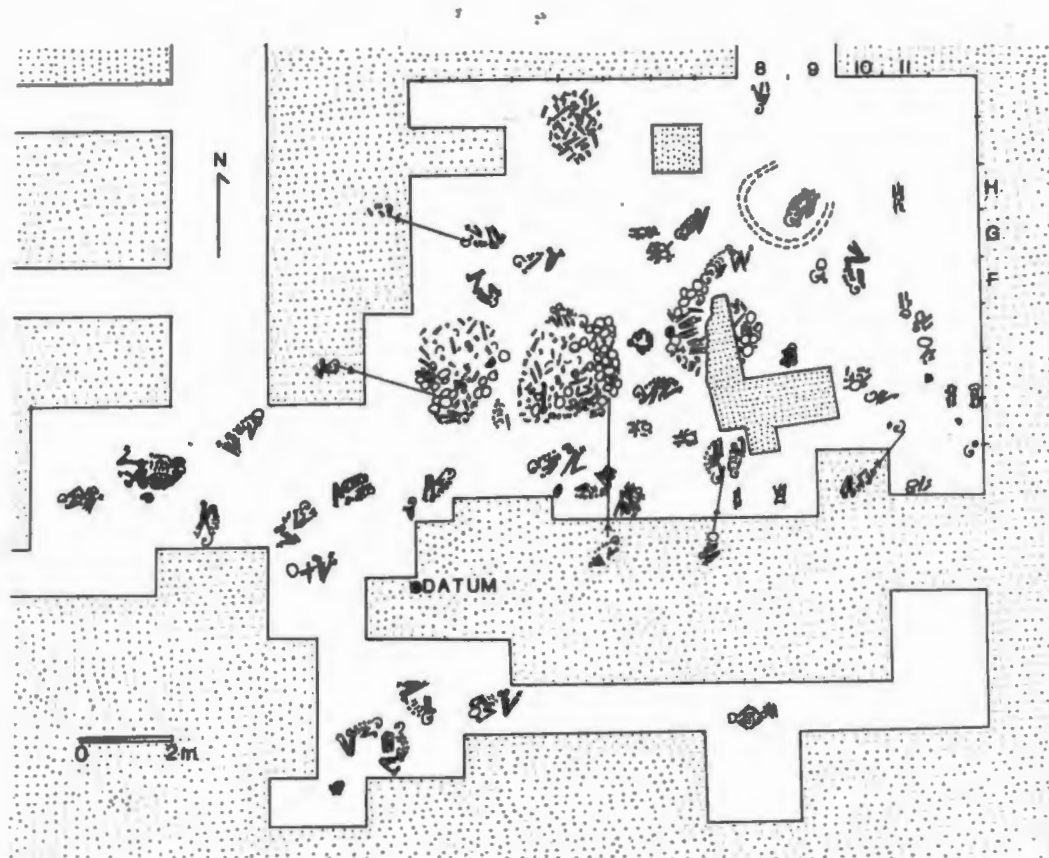


Figure 4. Plan of part of the excavations at Las Vegas Site 80, showing the distribution of burials in the midden. The location of Feature 63, the wall trench of a preceramic shelter in sections G-H/8-9, is shown by broken lines. Three circular ossuaries (Features 25A, 25B and 34) are shown in the center of the drawing.