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Pernil Alto: an agricultural village of the Middle Archaic Period in Southern Peru

der Reihe / of the series

Forschungen zur Archäologie Außereuropäischer Kulturen; Bd. 17

DOI: <https://doi.org/10.34780/faak.v17i0.1000>

Herausgebende Institution / Publisher:
Deutsches Archäologisches Institut

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18 Mobility

The aim of this chapter is to evaluate the patterns of mobility or sedentism of Pernil Alto. Connected to this is the question of the logistical radius (*sensu* Binford 1982) which was already partly mentioned in other chapters (Chapters 9 and 17). The results of these will be included in a final discussion of the state of the mobility.

The question of sedentism is of special interest in the context of the Middle Archaic Period in the Central Andes. Early sedentary, year-round occupied settlements with mixed economies primarily based on the use of marine resources but also integrating already domesticated plants as secondary resources have been documented in coastal areas (Benfer 1999, 2008; Engel 1988a; Stothert 1985). On the other hand, the use of domesticated plants in low-level food-production systems (*sensu* Smith 2001) was even documented for groups still maintaining a cyclic mobility (compare Rindos 1984 and catalog of Göbel 1993). For example, cyclical mobility including stays in the highlands and the coast, was demonstrated for the Preceramic Period of Northern Chile (Núñez/Hall 1982; Núñez et al. 2010) and was assumed already for the inhabitants of Lauricocha (Lanning 1967: 48). Cyclical mobility patterns were demonstrated in a more reduced area for the preceramic sequence of the Ayacucho basin, during which some domesticated plants were already used (MacNeish 1992; MacNeish et al. 1983), but as well on the central Peruvian coast during the Archaic Period (Díaz Arriola 2006). In a small area of Northern Peru, in the Zaña and Jequetepaque valleys, a combination of agriculture and settled life was probably developed in the Nanchoc pocket during the Tierra Blanca phase (7500–5000 BP) in the local chronology, while the surrounding contemporaneous groups were still mobile and foraging (final synopsis by Dillehay 2011c). These developments were presented in further detail in Chapter 3.

However, the societies of the following Late Archaic Period of coastal Peru characterized by monumental structures were clearly sedentary in combination with a productive agriculture (Haas et al. 2013; Shady Solís 2006a, 2006b, 2009). Those societies—combining a sedentary life with productive agriculture and the intensive use of marine resources—were called the “first civilization” of Peru and formed the basis for later cultural, political and economic developments. In general, the combination of sedentism and agriculture is considered as one of—if not the—key characteristic of what is called the “neolithization” in the Old World.

Because of these multiple and parallel developments of different forms of mobility and economy that prevailed before the combination of sedentism and agriculture, it is important to examine more precisely the state of mobility or permanence of the population of Pernil Alto. This analysis enables evaluation of the importance of the developments in Southern Peru within the overall development of the Central Andes.

The examination is complicated by the fact that there is nearly no information available about the Middle Archaic Period of the Rio Grande basin. Even though the sites of La Esmeralda (Isla 1990), Las Brujas (Vogt 2007; Vogt 2008; Vogt 2011), and Santa Ana (Engel 1963b, 1987a) are all located in the Rio Grande basin, the available information is—with the exception of La Esmeralda—too sparse to evaluate the mobility or economy of their occupants. In the case of La Esmeralda, a higher mobility of the occupants can be assumed, but the information is based on the results of a relatively restricted excavation area. Because of the sparse information, a regional settlement pattern or a possible site hierarchy of the Middle Archaic Period cannot be established or studied. This would be useful, if not essential, to evaluate the prevailing state of mobility of the population. Only with the knowledge of the regional settlement pattern, the concrete use of the landscape and relations between sites can be evaluated, bringing more valid results about the mobility of the population.

However, as the regional information for the evaluation of the mobility is insufficient, the internal information of Pernil Alto will be used to analyze the state of mobility. This is less satisfactory than a regional study, but can—in combination with the Sr-analyses (Chapter 12.2)—still produce valid results. The question is: was the dependence on agriculture that was evident from Phase 1 onward (see Chapter 17) connected with a settled way of life, or was it integrated in a mobility pattern? Thus it is important to clarify if Pernil Alto was a camp that was seasonally used for agriculture, or an agricultural village of a sedentary population.

Sedentism does not simply describe the opposite of mobility. Instead, in archaeology it is understood in various gradations used to describe the state of mobility or sedentism. Those include for example, the definitions of Beardsley et al. (1956) who defined *free wandering* groups as completely mobile groups without territorial borders, *restricted wandering* groups as mobile groups

with territorial borders, *central-based wandering* groups as groups which spend most of the year on one location but move during the rest of the year, *semi-permanent sedentary* communities which stay year-round at one location but change the location every few years, and *simple nuclear centered* communities which stay year-round on one location and do not change this location any more despite migration. This system was established as a general scheme for archaeological cultures and includes further gradations which are not important here. The concept of *central-based wandering* groups is reflected as well in the concept of *microbands* and *macrobands* as applied by MacNeish (1983). It is however more flexible and describes a pattern during which small groups are mobile and self-sufficient (*microbands*) during parts of the year, but then gather together and form larger groups in one location (*macrobands*) during other parts of the year. The length of the stays is measured by the seasonality of resources of the sites of the macrobands. This concept results in a more flexible definition of mobility, making it possible to detect increasing or decreasing trends of mobility with “final” year-round use of resources in one place. However, solid baseline data, good preservation conditions, regional information, and seasons detectable in resources are necessary for its application. Binford (1980; 1990) draws a distinction between a residential mobility—which describes the moving of the camp of a group towards resource areas—and a logistical mobility—which describes movements of small task groups bringing resources to the camps. The scale of mobility applied by him is based on Murdock (1967) and ranges from *fully mobile* or *nomadic* communities with a high residential mobility, over *semi-nomadic* communities which “wander in bands for at least half of the year but occupy a fixed settlement at some season or seasons” (Binford 1980: 13), to *semi-sedentary* communities which “shift from one to another fixed settlement at different seasons or who occupy more or less permanently a single settlement from which a substantial proportion of the population to occupy shifting camps” (Binford 1980: 13), to *fully sedentary* communities which “maintain living sites that are regularly used” and “groups who do not move their residence from year to year, although task units may travel out periodically” (Binford 1990: 122). Even though the concept of Binford was developed for hunter-gatherer societies, its application is helpful for evaluating the mobility of Pernil Alto. Thus, the mobility of Pernil Alto will be located on the “Murdock scale” as done by Binford.

The analyses of the Strontium isotopes (Chapter 12.2) have made important contributions to the evaluation of the mobility of the occupants of Pernil Alto. Following these results, mobility—if it existed—was re-

stricted to the river valley in altitudes of between about 300 m and 1500 m. The samples taken from the individuals buried at Pernil Alto have the highest accordance with the natural Sr signals of this area. A farther reaching mobility which would have included the coastal area or the highlands can therefore be excluded. The “exotic” materials (obsidian as well as beads and remains of sea shells) must have been brought to the site via other means. They are not the result of a residential mobility. If they were transported to the site via a logistical mobility or some kind of exchange is unknown at the moment, and would require more regional studies and a better knowledge of the regional settlement pattern to answer. However, as the population of Pernil Alto can be linked to the river valley area, any assumed mobility must have been conducted within this area. In what follows it will be evaluated if some indicators for such a mobility are detectable at Pernil Alto, or if these are indicators for a more sedentary (semi-sedentary or fully sedentary) population.

18.1 Indicators for mobility and sedentariness

In archaeology, the stage of mobility or better sedentism is determined using several criteria of the archaeological record. Even though some of these criteria are higher rated than others, there is a general consensus that there is no single indicator for sedentism. Rather, sedentism and mobility should be evaluated by a combination of various indicators. Single factors of the archaeological record of Pernil Alto which are useful for such a determination will first be evaluated and discussed independently. Then the mobility or sedentism of Pernil Alto will be rated based on these results.

Various criteria for the detection of the sedentism of an archaeological community have been discussed by various authors (Beardsley et al. 1956; MacNeish 1981a; Rafferty 1985; Kelly 1992; Bar-Yosef 1998; Belfer-Cohen/Bar-Yosef 2002; Boyd 2006; Marshall 2006). The criteria differ from author to author and are depicted in Table 67.

Most of the criteria were formulated for the evaluation of sedentism during the Natufian in the Levant (Bar-Yosef 1998; Belfer-Cohen/Bar-Yosef 2002; Boyd 2006), where the emergence of sedentism is of special interest in the research of the beginning Neolithic. Other criteria (Beardsley et al. 1956; Rafferty 1985; Kelly 1992; Marshall 2006) are of more general applicable nature. Beardsley et al. (1956) are very schematic and the listed criteria refer to “semi-permanent sedentary” com-

munities (Beardsley et al. 1956: 140). Others (Rafferty 1985; Kelly 1992; Marshall 2006) summarize criteria from literature, present similarities in the indicators, and discuss them critically. Concrete, detailed studies of sedentism in the Central Andes are rare. However, Mac-

Neish (1981a) used a very comprehensive approach to detect sedentism in his investigations of the Pre-ceramic period in the Ayacucho basin, in which he used the seasonality of the found botanical and faunal resources associated with the archaeological sites studied.

Criteria	Beardsley et al. 1956	MacNeish 1981c	Rafferty 1985	Kelly 1992	Bar-Yosef 1998	Belfer-Cohen/Bar-Yosef 2002	Boyd 2006	Marshall 2006
<i>Site characteristics</i>								
structured arrangement	X		X	X				X
substantial architecture			X	X	sp	sec	?	X
house shape			X					X
special buildings			X					
storage	X		X		sp	sec	X	
site size			X					
thick (midden) layers			X				X	
thin refuse deposits	X							
<i>Artifacts</i>								
heavy artifacts/groundstones			X		sp	sec	?	X
pottery	X		X					X
artifacts amount			X	X				
artifacts variation			X	X				
artifact distribution			X	X				X
expedient flake tools				X				
bipolar reduction				X				
<i>Biological indicators</i>								
seasonality		X	X					X
human commensals			X	X	X	X	X	
diseases						sec		
scarlar stress ³¹						sec		
<i>Location</i>								
site location			X					
settlement pattern			X					
chronological development			X				X	
resource abundance				X				
<i>Social indicators</i>								
subsistence				X				
primary social stratification						sec		
conflicts						sec		
cemeteries	X				sp		?	
ceremonial activity	X							

Table 67: Criteria for the detection of sedentism in archaeological records. (sec = secondary; sp = semi-permanent; ? = questionable)

The various indicators can coarsely be categorized into the groups of site characteristics, artifacts, biological indicators, location, and social indicators. Within each group acceptance and importance of indicators varies.

Site characteristics as indicators for sedentism

Important indicators within the site characteristics include a structured arrangement of the detected dwellings or houses, in contrast to randomly placed ones or overlapping dwellings. Furthermore, substantial architecture, especially stone architecture is considered an important or strong indicator for sedentism, even though it is sometimes questioned as an indicator for year-round permanence versus a more substantial landscape marking (Boyd 2006). Another strong indicator is the presence of storage facilities, especially storage pits, which open the possibilities for expanded stays on the site. However, storage pits should be identified not only by their shape or form, but by the presence of botanical material inside (Boyd 2006). Furthermore, the thickness of occupation layers as a result of long stays and thus more garbage production is considered a good indicator for sedentism within single site remains (Boyd 2006; Rafferty 1985).

Less accepted or weaker indicators for sedentism or a permanent use of a settlement include house shapes. Rectangular houses are more associated with sedentary groups, and circular houses are more associated with mobile groups. Binford (1990) was able to show ethnographically that circular houses are more associated with mobile hunter-gatherers than with sedentary hunter-gatherers. Other, less mentioned indicators are special buildings in the form of public or ceremonial buildings and the site size (Rafferty 1985).

Artifacts as indicators for sedentism

Heavy artifacts or groundstones, pottery, and the distribution of artifacts are considered strong indicators for a sedentary occupation of a site. Heavy artifacts or groundstones are interpreted as indicators because of the difficulties of transporting them over longer distances. However, the value of this indicator has been questioned in general (Boyd 2006) and groundstones only directly indicate a higher importance of plant resources and are therefore a secondary indicator for decreased mobility. Pottery is indeed a strong indicator for sedentism, but the lack of pottery in the archaeological record does not necessarily indicate mobility because some distinctly sedentary groups did not use pottery. This is seen, for example, in the Late Archaic Period of the Central Andes (see for example Shady Solís 2009, 2010 with further literature there) or the pre-pottery Neolithic A and B in the Fertile

Crescent (see for overview Moetz 2014). The distribution of the artifacts as an indicator for sedentism goes in the same direction as the structured site arrangement, and is based on the assumption that activities, refuse, etc. should cluster in more circumscribed areas than they would in camps of more mobile groups where such locations are less pronounced and detectable.

Less strong—or less frequently mentioned—indicators from the artifact information of a site include the amount of artifacts, their variation, and their nature, for example “expedient flake tools and bipolar reduction” (Kelly 1992: 55). That is, that a higher amount and a higher variation of artifacts indicate longer stays which leave more material, and a higher variety in the activities in contrast to shorter and more specialized used sites. However, the connection between stone technology and mobility is not very clear (Kelly 1992: 55). In general “many interpretations of stone assemblages as indicators of mobility are subjective, intuitive, and sometimes contradictory” (Kelly 1992: 56). Nevertheless, in connection with other criteria, the information from the artifact assemblage can indeed be useful for the reconstruction of the stage of mobility or sedentism. This is especially the case for the variation of the artifacts and the activities connectable with them. The assumption is mainly applicable to the development of activities connected with crafts. An increase over time of these activities can be useful as an indicator for increasing sedentism during time.

Biological indicators for sedentism

Frequently mentioned strong indicators for sedentism are seasonality (MacNeish 1981a; Marshall 2006; Rafferty 1985) and human commensals (Boyd 2006; Bar-Yosef 1998; Belfer-Cohen/Bar-Yosef 2002; Kelly 1992; Kelly 1992; Rafferty 1985). Seasonality refers to the temporal distribution within the cycle of the year of the botanical and/or faunal remains detected in the archaeological record of a site. Seasons of human presence on a site can be proved by the presence and development of these remains (blooming phase, maturity stage, etc.) which can be associated with certain times of the year. Using this indicator, the time of use of a site within a year can theoretically be determined very precisely. Nevertheless, two problems are associated with this kind of indicator: First, seasons are not as distinctly pronounced in the tropics as in temperate zones, and therefore temporal availability can be expanded (Rafferty 1985: 135). Second, the temporal distribution of the remains is mainly based on recent observations, but different climatic conditions during the past could have resulted in temporal distributions of the plants and animals that are different from today.

“Human commensals” refers to small animals—small rodents like mice and small birds like sparrows—that are attracted by refuse produced in human settlements. The presence of human commensals is seen as a strong indicator since it “indicate[s] a continuous supply of fresh trash and hence year-round occupation” (Kelly 1992: 56 f.).

Less frequently mentioned indicators for sedentism are diseases and scalar stress (Belfer-Cohen/Bar-Yosef 2002), but both are seen as secondary indicators. Scalar stress should be indicated by an increase of children.

Indicators of sedentism by the location

Necessary indicators for a possible year-round occupation can be derived from the location of the site. It should be “located on a spot that was rarely subject to flooding” and be close to a “reliable year-round source of water” (Rafferty 1985: 136). In a similar vein is the general good and ideally year-round availability of resources in the surroundings of the site. However, these are negative indicators. When the mentioned criteria are not met, a year-round occupation can nearly be excluded. But on the other hand, the presence of these indicators cannot be interpreted as a definitive indication for long-term stays.

Another indicator can be derived from the study of the settlement pattern. This would require the knowledge of a number of contemporaneous sites, which is not the case in the study area. Generally connected to this criterion is the study of changes in the archaeological record in a chronological development. Thus, “[t]he best procedure that can be used to identify sedentariness is based on having available a developmental sequence so that site characteristics can be compared over time and changes in the indicators of sedentariness can be high-lighted” (Rafferty 1985: 137). Even though generally referring to the settlement pattern, this can be done in the case of Pernil Alto by comparing the indicators by occupation phases with the internal chronological development.

Social indicators for sedentism

A last group of indicators for sedentism can be derived from social aspects. One indicator for sedentism is seen in the existence of cemeteries (Beardsley et al. 1956; Bar-Yosef 1998), even though its validity has also been questioned (Boyd 2006).

The form of subsistence is related to the form of mobility as foragers deplete the surrounding resources and then move on (Kelly 1992: 46). In contrast, productive agriculture is an accepted distinct indicator for sedentism. However, not all used natural food resources get depleted, as in the example of early sedentary sites with

a subsistence based on marine resources on the Central Peruvian coast (Benfer 1999, 2008; Engel 1988a). Therefore, the form of subsistence is again a negative indicator: Only if not-depletable resources or agriculture (in the sense of a dependence on produced food in contrast to a low-level food production, see Chapter 17 for further definition) are not evident, sedentism can be excluded as no stable subsistence would have been possible to ensure year-round stays of the population. On the other hand, the pure existence of not-depletable resources or even agriculture is not a necessary indicator for sedentism.

Other, less often mentioned indicators, and sometimes difficult to detect in the archaeological record, include a primary social stratification, early conflicts (Belfer-Cohen/Bar-Yosef 2002), and ceremonial activities (Beardsley et al. 1956). The first two are rated as only secondary indicators.

The significance of most of the listed indicators or criteria for the detection of sedentism by archaeological remains was sometimes criticized, in particular those indicators which were based on ethnographic or ethno-archaeological arguments (see Boyd 2006; Kelly 1992; Rafferty 1985 for details and further literature). However, one must consider that the historical development of some phenomenon in the material culture of ethnographically studied groups is often unknown. Thus, it is sometimes not very clear if those phenomena are in reality traditions from a sedentary period of this group in the past which were maintained in an actual mobile period, or if the phenomena were introduced from groups of another stage of mobility in the past.

18.2 Mobility or sedentism at Pernil Alto?

At this point, the archaeological record of Pernil Alto will be analyzed based on the outlined criteria to clarify the stage of mobility on the previously mentioned “scale” between fully mobile, semi-mobile, semi-sedentary of fully sedentary. Each indicator on its own is not independently significant, however, a cumulative occurrence is interpreted as being significant in this case.

18.2.1 INDICATORS FOR SEDENTISM

Site characteristics

As discussed in Chapter 15, the dwellings at Pernil Alto were erected in a structured arrangement with a central, circular, open area, and smaller compounds consisting of four dwellings each. They were placed during the oc-

cupation phases in a pattern of “circling courtyards”. The dwellings did not overlap and abandoned dwellings were later used as burial places. This pattern can be interpreted as an indicator for sedentism, with a planned site development indicating a long term use.

Other, strong indicators for sedentism at Pernil Alto are the presence of storage pits, which are clearly identifiable by the botanical remains associated with them. Furthermore, it seems that some plants were stored in bottle gourd vessels, as the found remain of one of such vessel (artifact 1021) indicates. Thus, plants were stored at Pernil Alto indicating the well-planned organization of the occupants which enabled them to stay on the site during times of resource shortages. However, the possibility of year-round agricultural production made storage less important, as outlined in Chapter 17.4.

The thick occupation layers, especially Features 4038–4429–4377 and 4043-1/2–4437-2–4385, indicate long stays with accumulated refuse on the site.

Artifacts

Heavy artifacts like mortars and groundstones were found in high numbers on the site. They indicate the need for heavy, non-transportable tools, which are accepted indicators for long term stays and thus sedentism.

The diachronic development of the artifacts (see Chapter 14) shows that activities related to the production of final products (handcrafts) gained importance during the development of the site in relation to other activities. This can be interpreted as an indicator for longer or increasing stays on the site.

The variation of the artifacts indicates furthermore that all anticipatable activities were conducted on the site. That means that the site had no specialized function, which makes short stays of specialized functions improbable.

The lithic industry is very simple, an indicator which is sometime associated with a reduced mobility (Kelly 1992).

Biological indicators

Very clear and strong indicators for permanent use of the site of Pernil Alto can be derived from the biological indicators. Most of the cultivated plants had short ripening seasons and thus could—at least theoretically—be cultivated year-round (see Chapters 10 and 17). Therefore, food from this resource was at least potentially available during the entire year. These resources were supported by resources of seasonal availability—especially *Prosopis*—which had as well relatively long utilization periods and were available for probably half of the year. A reduced seasonal utilization period was only

connected with guanacos, which came down from the highlands when the coastal lomas started to bloom and could only be hunted close to the site on their way to the littoral. This was probably the case between June and September, which is more or less the actual blooming time of the lomas (see Chapter 4). However, the blooming seasons of the Middle Holocene could have differed from those of today. The same is true for the catching of freshwater shrimps, which were most probably caught mainly between October and November (see Chapter 4). In contrast, hunting of cervids was possible year-round in the surroundings of Pernil Alto. However, hunting and catching of freshwater shrimps played a subordinate role in the overall diet. Thus, by the fairly simple combination of agriculture, the collection of wild plants and supporting hunting, a year-round residence was possible and—in particular given the presence of cultivated plants—very likely. Therefore, the resources used at Pernil Alto at least potentially cover all seasons of a year, indicating a year-round occupation.

One further strong indicator for sedentism at Pernil Alto can be derived from the recovered human commensals which are small rodents and small birds (see Chapter 11). This is a widely accepted indicator for sedentism.

Location

Pernil Alto is located in close proximity to a perennial river providing a year-round water supply. It is situated on a small spur above the fertile river valley and thus is saved from potential flooding events. Furthermore, available resources in the direct proximity of the site—including arable land, probably dense *Prosopis* stands, freshwater shrimp in the river, game in the riparian forest, and the assumed grass steppe—were very abundant. But this site location is a negative indicator for sedentism, meaning that a year-round occupation was possible and cannot be excluded.

The internal chronological development of the site can be interpreted as a further indicator of a permanent use of the site. From Phase 1 onwards there was a concentration of produced food that is measurable in the archaeological record, both in the botanical remains as well as in the activities. Furthermore, as mentioned already above, the handcraft activities increased throughout time. Therefore, the chronological development indicates a more or less permanent use of the site from Phase 1 onwards.

Social indicators

The social indicators for sedentism at Pernil Alto are—apart from the form of subsistence—not very clear. Ag-

riculture, beginning in Phase 1, is a clear and strong indicator for sedentism, as the time investment for preparing the soil, planting, caring, and harvesting surely made long term stays necessary. Furthermore, the site was used as a cemetery. The preferred placement of burials within abandoned dwellings while other dwellings were still in use indicates a parallel use of the site as domestic site and cemetery. Placing the dead in the living area indicates a strong connection to the site, and the high number of burials indicates a continuous use of the site. Ultimately, the paleodemography—even though problematic—indicates a more or less complete cross section of a population in which no age class or sex is missing or over- or underrepresented.

18.2.2 INDICATORS FOR MOBILITY

Apart from some wall remains in the eastern part of the pit of dwelling 10 (see Chapter 13), there are no indications for substantial architecture. Furthermore, the shape of the buildings is circular to oval, a shape more related to mobile groups rather than sedentary groups (Binford 1990). Both are indicators for a mobile way of life.

The lack of special buildings could be interpreted as a not very established site use. However, it was not possible to excavate the complete settlement of Pernil Alto and not every single settlement needs its own special building directly on the site. Several smaller sites could have shared “special buildings” or comparable gathering or ceremonial areas. But the settlement landscape of the time of Pernil Alto is not known from the area.

Artifacts

A distinct indicator for sedentism—pottery—is missing in the archaeological record of Pernil Alto. However, as mentioned before, this lack cannot be interpreted as an indicator for mobility.

Within the composition of the artifacts, two material groups could indicate mobility: those artifacts made of obsidian and those made of sea-shells. While the obsidian is of extremely low quantity, in contrast, the jewelry made of sea shells is important. If taken as indicators for mobility, then a mobility reaching to the source of the obsidian—probably the area of Quispissisa (Burger/Glascock 2000; Contreras et al. 2012; Tripcevich/Contreras 2011, 2013)—was of very low importance. This was most probably the result of some rare forays of task groups to the source area or—more probably—the result of some exchange with other groups. The sea shells, on the other hand, could indicate more frequent movements of task groups to the littoral or stronger connec-

tions to other groups of this area. Movements of the entire population to both areas can be excluded by the results of the Sr-analyses.

18.2.3 NOT ASSIGNABLE INDICATORS

Other indicators are not detectable in the archaeological record of Pernil Alto or not known from the area: the diseases of the population are still unknown, as detailed anthropological studies are still outstanding. Scalar stress is not examinable, as more detailed studies of other sites in the area would be needed to make chronological comparisons. Furthermore, the settlement pattern of the Middle Archaic Period, as well as the chronological development from the Early to the Late Archaic Period of the area, is not reconstructable at the moment due to very few known sites. The same can be said for early conflicts and ceremonial activities. A final indicator—a primary social stratification—is very slightly indicated at Pernil Alto. Nevertheless the data is very sparse and needs to be expanded and compared to earlier and later periods in order to come to valid results which could be helpful as indicators for sedentism or mobility. All of these indicators have to be rated as not assignable for the evaluation of the mobility or sedentism of the population of Pernil Alto.

18.2.4 CONCLUSION OF THE STATE OF MOBILITY OR SEDENTISM

The evaluation of the archaeological record shows that the criteria indicating a permanent use of Pernil Alto clearly outweigh those indicating a possible mobility. Only a few criteria not indicative for sedentism were detectable. The indicators are listed in Table 68. Therefore, together with the results of the Strontium analyses which reduced the possible mobility to the river valley, a year-round permanent use of Pernil Alto can be assumed. Pernil Alto can therefore be characterized as having been a permanent, sedentary village. The settlement was the permanent center of the occupants, where they conducted primary all-day activities and agriculture in the close proximity (see Chapter 17 for details). In total, Pernil Alto was a permanent settlement embedded in the surrounding landscape of the middle section of the Rio Grande, with some less pronounced connections to the highlands and some stronger connections to the littoral.

Nevertheless, the settlers possibly conducted some logistical mobility which included forays to the littoral, where shells were obtained and—less frequently—to the highlands, from where the obsidian found on the site

originated. However, it is still difficult to determine if these materials (shells and obsidian) were in fact brought to the site by task groups starting from and coming back to the site of Pernil Alto, or if they were brought to the site by exchange with other groups. The information from other contemporaneous sites is still insufficient to investigate these relations. This will be discussed in more detail in the following Chapter 19.

Another aspect has to be briefly mentioned: No other Archaic sites are known from the middle section of

the Rio Grande basin. Even during a small scale survey focused on the detection of such sites, no other Archaic site could be identified in the area. However, the survey detected 35 *possible* locations with characteristics comparable to those of the site of Pernil Alto (see Chapter 20). None of the locations were verifiable from the surface as representing a site. But suitable locations for settlements like Pernil Alto are found in the surrounding of the site, thus a complete shift of a settlement would have been at least possible in the area.

Characteristics	Mobile	Sedentary	Not assignable	No information
<i>Site characteristics</i>				
Structured arrangement		X		
lack of Substantial architecture	X			
House shape	X			
lack of Special buildings	X			
Storage		X		
Site size			X	
Thick (midden) layers		X		
Thin refuse deposits			X	
<i>Artifacts</i>				
Heavy artifacts/groundstones		X		
lack of Pottery	X			
Artifacts amount		X		
Artifacts variation		X		
Artifact distribution			X	
Expedient flake tools		X		
Bipolar reduction			X	
<i>Biological indicators</i>				
Seasonality		X		
Human commensals		X		
diseases				X
Scalar stress (higher rates of children)		X		
<i>Location</i>				
Site location		X		
Settlement pattern				X
Chronological development				X
Resource abundance		X		
<i>Social indicators</i>				
subsistence		X		
Primary social stratification			X	
conflicts				X
cemeteries		X		
Ceremonial activity			X	

Table 68: Indicators of mobility and sedentism at Pernil Alto.