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Lambers, Karsten

The geoglyphs of Palpa, Peru: documentation, analysis, and interpretation

der Reihe / of the series

Forschungen zur Archäologie außereuropäischer Kulturen Bd. 2

DOI: <https://doi.org/10.34780/faak.v2i0.1000>

Herausgebende Institution / Publisher:
Deutsches Archäologisches Institut

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7. Discussion: The Andean model and the Palpa geoglyphs

In the previous section, the Palpa geoglyphs were investigated concerning geoglyph variation (formal, temporal, and spatial) and human activity related to geoglyphs. This section is dedicated to a discussion and interpretation of the results. To that end, archaeological evidence documented on geoglyph sites on Cresta de Sacramento and Cerro Carapo is tested against the main tenets of the Andean model as defined in section 3.2.2 in order to assess the ability of the model to explain the geoglyphs. According to the model, geoglyphs expressed social and spatial order, provided places for ritual activity, were considered sacred space, were related to mountain worship and concepts of water and fertility, and were used as roads in some cases (fig. 5).

7.1 GEOGLYPHS AS EXPRESSIONS OF SOCIAL AND SPATIAL ORDER

As shown in section 6.3.1, the construction of a geoglyph, or a complex of geoglyphs, involved the participation of groups of people. A place was claimed by a certain group and henceforth served as a stage for collective activity including maintenance, remodeling, and use of a geoglyph or a group of geoglyphs for a variety of purposes as mentioned previously. This string of geoglyph related activity often extended over a considerable time span during which members of the group were involved in different acts, whether in larger numbers (*e. g.* for construction activity), in smaller subgroups (*e. g.* for activity related to stone structures) or maybe alone (*e. g.* for line walking and vessel placement).

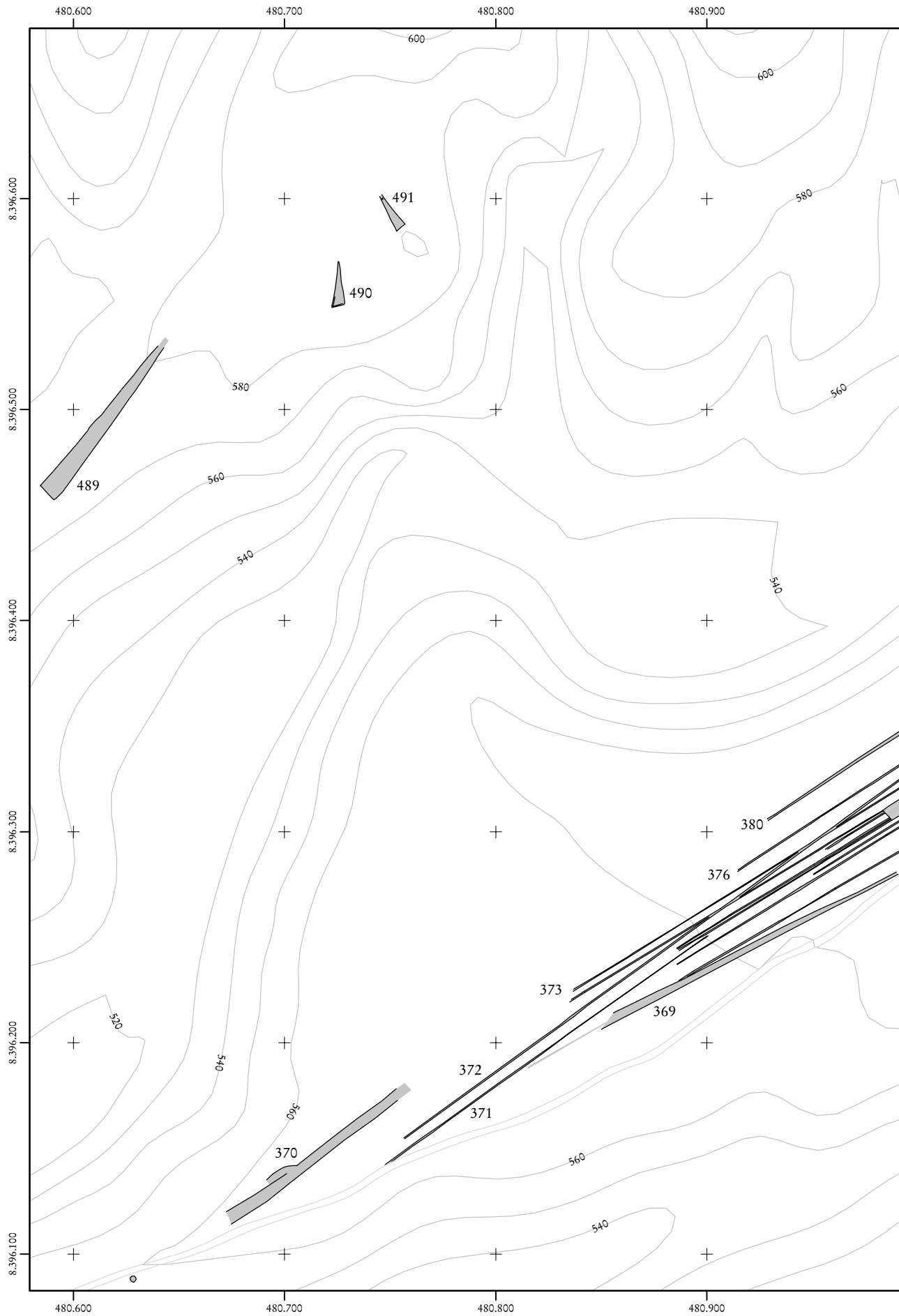
Archaeological evidence from the geoglyphs alone does not easily show the composition of social groups or how they identified themselves. Nevertheless, some conclusions can be drawn that place the geoglyphs and the social groups associated with them in a wider societal context. The geoglyphs played an integrative role involving the whole society, but they were also of special importance for subgroups within the society. Both aspects were closely related.

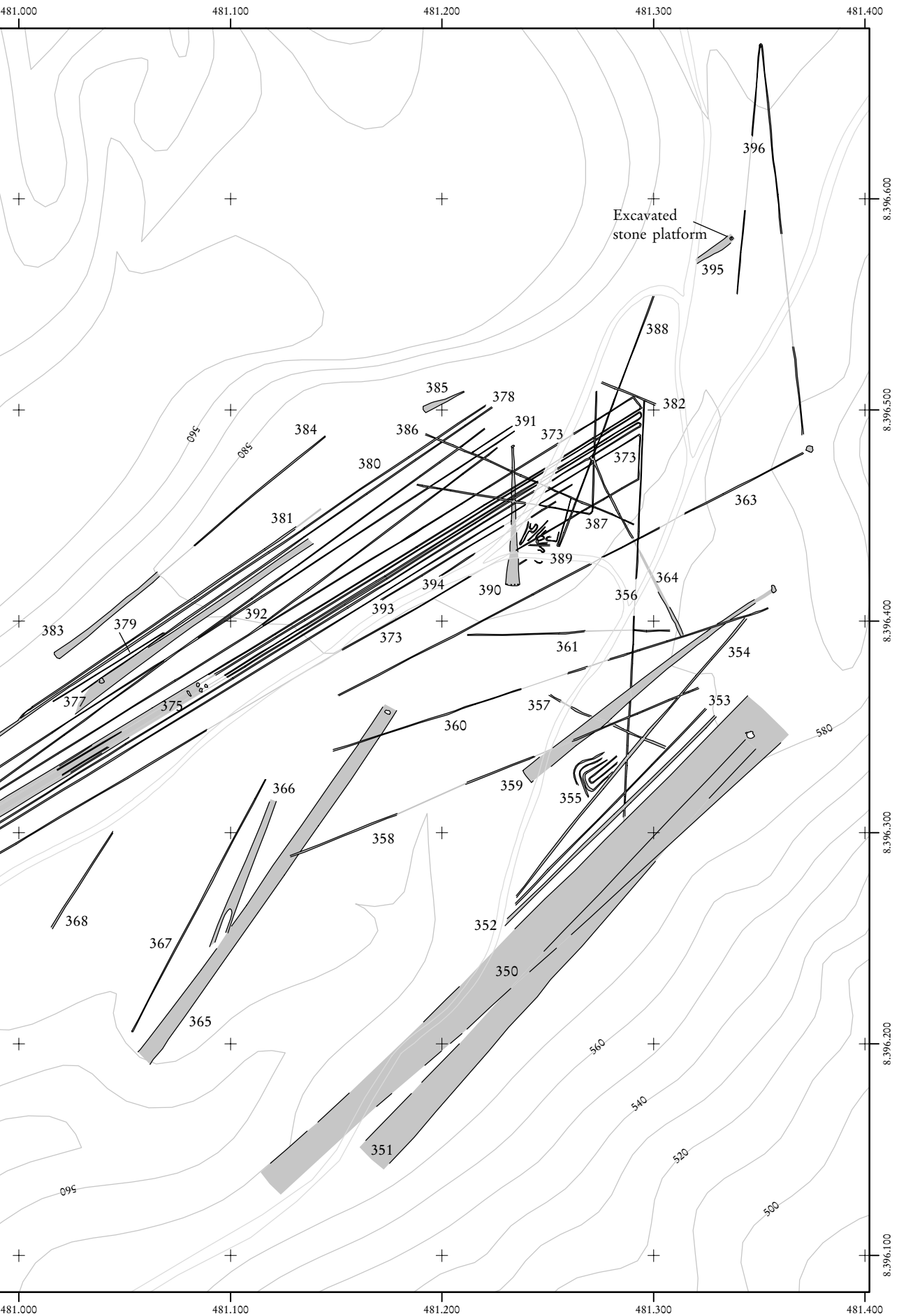
Geoglyphs show a noticeable uniformity through time and space. In spite of clearly observable variation described in previous sections, the basic principle of marked space in the desert that was worth the invested time and manpower and that represented important aspects of ancient world view remained largely unaltered throughout almost 1,200 years. It furthermore seems that regional variation within the drainage was minimal, though this will have to be investigated more thoroughly once comparable data from other valleys becomes available. Geoglyph distribution did not correlate directly with contemporaneous settlement patterns but rather proved more stable through time. Important changes in sociopolitical organization, like the break observable between Early and Middle Nasca⁵⁹, are rather marginally reflected in geoglyph distribution and use. The concern with water and fertility mirrored in goods placed on geoglyph sites was always important to the ancient inhabitants of the region and therefore transcended changing political circumstances which affected them. The geoglyph phenomenon was a strong link between late Paracas and Nasca culture and society, and had its roots even earlier in the Paracas petroglyph tradition. It was certainly influenced, yet not fundamentally altered by major technological, political, and other changes along the time line of the Paracas-Nasca cultural continuum⁶⁰. In this sense, geoglyphs can literally be understood as common ground (Clarkson 1999) for all members of Late Paracas and Nasca society.

Within this common conceptual framework subgroups of Nasca society acted and interacted.

⁵⁹ Reindel et al. 1999: 372; Silverman 2002a: 167; Orefici/Drusini 2003: 89f.

⁶⁰ From this point of view, the fact that the geoglyph tradition came to an end early in the Middle Horizon is a strong indication that the Wari intrusion into the Nasca basin entailed greater change in culture and society than all disruptions suffered throughout the centuries before.





Map 11. Geoglyph sites PV67A-89 (bottom) and -90 (top) on Cresta de Sacramento.

Guided by geoglyph specialists, members of groups gathered on certain occasions in the desert to construct new geoglyphs, to remodel existing ones, or to walk along lines and trapezoids in a prescribed fashion. They placed ceramic vessels (possibly containing food or beverages), field crops, textiles, *Spondylus* shells or other goods on geoglyph borders or stone platforms. Apparently, an important aspect of this group activity was its visibility from other geoglyph sites, from vantage points on elevated terrain, and even from parts of the inhabited and cultivated valley floor. Geoglyph sites can thus be understood as a stage with actors and spectators. In this sense, the importance of group activity transcended specific groups. Awareness of group identity was raised among members as well as outsiders. Group interaction between geoglyph sites may have assumed a competitive character concerning status within a larger societal context.

In order to better understand this aspect, it is necessary to discuss how these groups may have been defined. Economic considerations are important. Group members that constructed geoglyphs spent many working hours away from other activity and had to be provided with food and water. Goods to be placed on geoglyph sites had to be produced and transported. These economic requirements, though difficult to quantify, show that geoglyph related groups must have had access to economic resources like water, arable land, clay deposits, and goods produced on the basis of these resources. Geoglyph related units of social organization may thus have coincided to a certain degree with economic units.

These economic considerations provide a link to spatial order as well. Economic resources, like arable land and water sources and access to them are fixed to a particular location to which habitational patterns of the group that utilized them likely were spatially related. Thus, though there is no direct correlation between geoglyph and settlement distribution, spatial order may have become indirectly manifest in social groups related to geoglyph sites.

The unit of ancient Andean social and economic organization best known from ethnographic and ethnohistoric sources is the *ayllu* (Moseley 2001: 53 ff). This multifaceted concept from the Inca period encompassed social, economic, and religious aspects such as kinship, land and irrigation rights, group labor, and ancestor veneration. Was ancient Nasca society organized in *ayllus*, and if so, are these *ayllus*

the same as the geoglyph associated groups defined above?

Within the framework of the Andean model, Urton, applying the social organization of early colonial times in the Nasca area to prehispanic times, suggests that this was indeed the case. He argues that the maintenance of lineal geoglyphs was organized along *ayllu* lines (Urton 1990: 205). In a similar vein, Silverman suggests that Cahuachi's temple mounds can be traced back to individual *ayllus*. She defines *ayllus* as "cognatic descent groups" (*i. e.* groups claiming descent from a common ancestor) with further characteristics such as residence or redistribution of goods (Silverman 1993a: 309f).

On the other hand, according to a stricter definition used by William Isbell, *ayllus* were linked to a specific kind of mortuary monument called by him "open sepulcher" that allowed access to, and public display of the ancestor's mummy (Isbell 1997: 136ff). Following Isbell's line of reasoning, *ayllus* would not have been present in Nasca society since they made their first appearance in the southern Andean region centuries later (Isbell 1997: 285).

Though open sepulchers were indeed unknown in the Nasca period, there is clear evidence of other forms of an ancestor cult that may not have involved the actual mummy, but effigies representing it⁶¹. The posts in the Room of the Posts at Cahuachi have been interpreted in terms of ancestor worship (Silverman 1993a: 174ff). These posts may furthermore have a parallel to those depicted on a Nasca 5 vessel on exhibit in the Museo de América, Madrid, Spain (Blasco/Ramos 1991: 231; Rickenbach ed. 1999: 325). Several posts are shown on that jar, each with a rectangular banner attached to its top and a lateral bar from which a trophy head is suspended⁶². Trophy heads, in turn, may also have been used in the context of ancestor veneration (Proulx 2001: 130, fig. 6.13). Thus, evidence for an ancestor cult involving posts, trophy heads, grave precincts, and maybe even geoglyphs is present in the Nasca archaeological record. It seems reasonable to assume, then, that social groups not unlike the *ayllu*, claiming

⁶¹ Silverman/Proulx 2002: 214ff, fig. 8.6; DeLeonardis/Lau 2004: 104ff; cp. evidence of mortuary ritual in La Muña: Reindel/Isla 2001: 306, figs. 27, 30.13–14.

⁶² It is tempting to view the posts erected on trapezoids in the same context. However, neither the posts shown on the Madrid vessel nor the ones of the Room of the Posts are directly linked to geoglyphs in any recognizable way.

descent from a common ancestor and being linked to economic resources, may well have been present in Nasca society, even though there is no evidence for open sepulchers.

Who led these groups? Silverman's description of *ayllu* structure suggests that leadership depended on individual capabilities and had to be negotiated and justified (Silverman 1993a: 309). If geoglyphs were the stable cultural expression of worldview or social ideology as described above, then the ability to lead a group to construct or remodel a geoglyph may have been a means of legitimation for a potential leader:

“To the degree that ideologies are materialized, they become part of the physical world that is constructed by social labor. Thus the material nature of an ideology, essential for cultural sharing, offers opportunities for control identical to that over production of other objects.” (Earle 1997: 152)

By performing a socially acknowledged act of leadership a group member may legitimate a claim to become or remain a group leader. Another observation seems to hint in this direction as well. The more Nasca society became politically fragmented from Early to Late Nasca, the more standardized became the geoglyph repertoire. If geoglyphs were the benchmark against which ephemeral group leadership was tested, then this self imposed limitation to the types that were most common through all phases – straight lines and trapezoids – may be explained by potential group leaders having to ensure their recognition by socially accepted acts. The construction of less common geoglyph types would have questioned their claims. But, it should be noted that this interpretation is highly speculative and there is clear evidence that leadership was organized in a more stable fashion during much of Nasca history (see *e. g.* the Middle Nasca elite graves at La Muña and Puente Gentil: Reindel/Isla 2001; Isla 2001a).

Summing up the available evidence, the existence in Late Paracas and Nasca society of *ayllu*-like social groups related to geoglyph complexes seems possible in the light of archaeological evidence from the Palpa geoglyphs. Thus, the Andean model provides a valid explanation for their social context. The presence or absence of such groups or of different kinds of social formations can, however, only be assessed to a limited degree based on evidence from the geoglyphs alone. Data on regional settlement

patterns, internal structure of domestic sites, distribution of prestige goods, grave furniture, diet etc. may provide a broader basis on which to build conclusions about Nasca social organization. Comparative data from the Palpa sites obtained within the framework of SLSA's Nasca-Palpa Project are currently being studied. The results are expected to shed more light on the issue discussed here.

7.2 GEOGLYPHS AS PLACES FOR RITUAL ACTIVITY

An important element of the Andean model, activity on geoglyph sites has frequently been called “ritual”⁶³. This term is problematic since it is not clearly defined. In the context of the Nasca geoglyphs, the term “ritual” carries with it widely differing meanings – the most important being religious (offerings, pilgrimage, processions, worship) and social (social groups claiming space, expressing their identity, and negotiating their status). This is a rather broad concept of “ritual”. Other definitions or uses of the term in anthropological as well as archaeological research are similarly multifaceted⁶⁴. While it is often used to describe action as opposed to thought (see overview in Bell 1992: 19ff), others define it as involving both action and the ideas and concepts by which the action is motivated (Insoll 2004: 10ff).

Two basic problems arise when trying to identify ritual in archaeological research. The first one is practical. The archaeological record is composed of material remains that are the results of human activity⁶⁵:

“What we have are the acts – or more precisely, the traces of artifacts used for the acts or the place where the acts occurred and also physical results of the acts (*e. g.*, deposits).” (Bertemes/Biehl 2001: 15)

These acts often can be reconstructed based on archaeological evidence. The more a certain kind of activity is repeated in the same place, using the same kind of objects, the clearer it becomes

⁶³ Urton 1990; Silverman 1990a; Rostworowski 1993; Rodríguez 1999.

⁶⁴ Merrifield 1987: 6; Bell 1992: 69ff; Rappaport 1999: 24ff; Sundqvist/Kaliff 2003; *cp.* historical review of theories on ritual in Bell 1997: part I.

⁶⁵ The cultural and environmental formation processes of the archaeological record, though important for its interpretation, are of no concern for the topic at hand and are therefore not discussed here.

in the archaeological record. Thus, activity is to a certain degree accessible with archaeological methods. On the other hand, concepts or thoughts that motivated or induced activity are more difficult to reconstruct. Usually, additional information from other sources such as written or oral histories, analogies etc. is needed. Thus, if the question is whether or not ritual activity took place on geoglyphs sites, then the answer from archaeological research can only refer to different kinds of activity as reconstructed from material remains (action), while conclusions concerning the underlying concepts (thought) require additional information.

The second issue when looking for ritual activity is a heuristic one. To what end is a certain kind of activity labeled “ritual” by archaeologists? What does the term imply about the meaning of the activity? In her critical review of the use of the term “ritual” in archaeological research, Irish archaeologist Joanna Brück identifies its – usually implicit – equalization with non-functional action devoid of rationality as most important common trait (Brück 1999). From a functionalistic viewpoint, ritual is conceived as being opposed to rational activity that is concerned with housing, subsistence, production, trade etc. Thus, by calling a certain activity “ritual”, a sphere of human activity is set apart that to the modern observer has a different role than other activity, a role that may not be as easily explainable as that of other spheres. “Ritual” is thus primarily an analytical concept.

It has to be kept in mind that this analytical category did not necessarily exist in the cultural concepts of ancient societies studied by archaeologists. According to Brück, different world views may well assign causality and rationality to activity labeled “ritual” in the above described sense. In a similar vein, British archaeologist Timothy Insoll has recently proposed to view religion, which is often seen as the basis for ritual activity, not as only a sphere of life alongside other spheres like subsistence, social organization etc., but rather as a central characteristic of life that determines all spheres (Insoll 2004: fig. 2). In this sense, religion, social ideology or world view equally determine and imbue with meaning all spheres of human life and activity.

Following Brück’s and Insoll’s reasoning, it becomes clear why ritual and other activity are often not as neatly separable in the archaeological record as the archaeologist would wish (Marangou 2001)⁶⁶. If the same concepts deter-

mine both ritual and non-ritual activity, and the same rationality is assigned to both, then both may be highly interwoven or take on similar expressions or manifestations. Indeed, certain traits often used to identify ritual (repetition, dedicated places, use of special objects) are equally typical for daily household activity.

Activity related to the Palpa geoglyphs included gatherings of social groups, line walking, placement of vessels and other objects along lines and on platforms, and food consumption, etc. (see section 6.3). Whether or not processions or races were held on geoglyphs cannot be determined with any degree of certainty. Geoglyph related activity required a considerable investment of time and labor. It involved large parts of the ancient population of the Palpa region organized in different social groups. These groups interacted on and across geoglyph sites. As described in the previous section, all these activities had an important social function since they determined group status and possibly group leadership.

All these acts may well be termed “ritual” in the sense as described above. Thus, the Andean model provides once again a plausible framework for archaeological evidence from the Palpa geoglyph sites. It has to be stressed, however, that the term “ritual” in itself is not an explanation, nor does it alone provide an understanding of the meaning of the discussed acts. For the people involved, it seems clear that geoglyph related activity was functional and rational within the framework of their world view, and it cannot be seen separated from other kinds of daily activity.

7.3 GEOGLYPHS AS SACRED SPACE

Much like the term “ritual”, “sacred” is equally problematic for similar reasons. As has become clear in the previous section, archaeological evidence does not alone reveal if geoglyphs were

⁶⁶ For example, it has been postulated that religious ritual be recognized as such in the archaeological record on the basis of positive traits (Renfrew/Bahn 2000: 406; Bertemes/Biehl 2001; Müller 2002), not just in a questionable *in dubio pro deo* attitude (Colpe 1970: 28) that interprets everything not otherwise explainable as religious. However, check-lists of such traits (e. g. Renfrew 1994: 51f) draw heavily upon belief systems known from written sources and are mainly suitable in well preserved, and well documented contexts. In less favorable circumstances, such trait lists are of little practical value.

considered sacred space. However, two aspects evident in the Palpa data suggest that geoglyph sites were considered places with a value of their own and of special importance in a wider context.

Firstly, geoglyphs were located in the desert. They were made and used in places that during large periods of time were remote from settlements. The different environment and elevation clearly set geoglyph sites apart from inhabited settlements and agricultural zones. Apart from inter-valley traffic, there was no other activity in the desert whose extent and importance came close to geoglyph related activity. Through the geoglyphs, large portions of the desert were incorporated into the cultural domain of the valley-based society (Silverman 1990b: 451). The cultural territory was that way considerably enlarged and enriched by new components. In no other time period, either before the Spanish conquest or afterwards, did the desert portion of the Nasca landscape receive such special attention than when it was marked with geoglyphs and occupied by human activity. Large amounts of labor were invested into this space over time. Thus, the culturally marked desert landscape was a valuable resource for the society.

This value proved, secondly, persistent over time. Geoglyph sites, once established, were not easily abandoned. As discussed in section 6.4, geoglyph sites developed more or less independently of the settlement pattern and often continued in use even when settled zones closest to them were abandoned. They were constantly frequented over time, even if the place where the people who used the geoglyphs lived might have changed. Thus, geoglyph sites maintained their importance even in the face of major changes in the valleys. Their special role was not short-lived, but rather represented a stable facet in the cultural history of the Palpa region for more than 1,000 years.

It is a plausible explanation to assume a sacred meaning to this special value and persistent tradition. The archaeological evidence is thus in accord with another important aspect of the Andean model. However, it should be noted that the critical comments on the term "ritual" apply to the term "sacred" as well.

7.4 GEOGLYPHS RELATED TO MOUNTAIN WORSHIP

Reinhard and Rostworowski proposed that specific deities were venerated on geoglyphs,

some of them related to mountains (Reinhard 1996; Rostworowski 1993). The results of the present study are not sufficient for an assessment of this proposition with any certainty since it is uncertain how mountain worship would become evident in the archaeological record. Probably the most obvious indicator would be orientation of geoglyphs towards mountain peaks (Reinhard 1996: 22 ff). A possible analogy hints in this direction because many line centers on the Nasca *pampa* are located on elevated terrain (Aveni 1990b: 49). As for the Palpa geoglyphs, on the narrow plateaus of Cresta de Sacramento and Cerro Carapo no line center as described by Aveni was recorded⁶⁷.

A possible orientation of lines from the Palpa geoglyph sample towards higher mountains has yet to be investigated. Observations during fieldwork suggest that some geoglyphs (among them trapezoids, straight lines, and sections of meandering lines) were directed towards Cerro Pinchango, but this could not be checked systematically by GIS since Cerro Pinchango and other prominent mountains visible from Cresta de Sacramento and Cerro Carapo were situated beyond the borders of the DTM available for the present study. Any potential relation would furthermore have to be statistically proven to be relevant.

7.5 GEOGLYPHS RELATED TO WATER AND FERTILITY

The deities mentioned by Reinhard and Rostworowski were associated with concepts of fertility. This aspect of the Andean model can better be judged on the basis of the Palpa data. Biomorphic geoglyphs depicting water related animals and plants (Reinhard 1996: figs. 46–63) are less common in Palpa than on the Nasca *pampa*. However, objects placed on stone platforms (fig. 40), the most prominent of them being *Spondylus* shells, strongly indicate that the concept of fertility played an important role in geoglyph related activity.

The presence of *Spondylus* shells along the Pacific coast is caused by warm ocean currents. During El Niño years, these currents shift, and *Spondylus* shells are found in coastal regions

⁶⁷ However, lines on slopes, some of them emanating from a common platform on the plateau edge, others branching off from a central line (fig. 21, maps 1, 4), come structurally close to line centers and may be expressions of the same concept under different topographical conditions.

where they do not occur in normal years (Marcos 1986, 2002). At the same time, rain is brought to regions where it usually does not rain. Apparently, the association of *Spondylus* shells and rain was well known throughout the regions affected by El Niño, so that the shell became a symbol of water and rain. Other objects found on stone structures carry with it a similar connotation. Crawfishes are only available when the rivers carry water, while field crops depend on the irrigation of arable land. Thus, a concern with the availability of water in the valleys and the fertility of the irrigated land is clearly reflected in objects placed on stone structures.

Apart from this rather indirect association of geoglyphs with water and fertility, a more direct relationship has been proposed by Aveni, with trapezoids being oriented parallel to river courses and lines perpendicular to them (Aveni 1990b). Although many Palpa geoglyphs indeed match this pattern, it seems coincidental. Wherever there are two or more large trapezoids in a geoglyph complex, at least one of them is not oriented alongside the river. The main criteria for defining the place and orientation of large trapezoids seems to have been the topography of the available terrain. Lines, on the other hand, are necessarily roughly perpendicular to the river course if placed on the neighboring hillside. On plateaus, however, lines point in many other directions as well, and no pattern is discernable (fig. 45).

Although not considered part of the Andean model for the purpose of this study (fig. 5), a comment seems worthwhile about Johnson's hypothesis that directly links geoglyphs to water. The Palpa geoglyphs most likely do not map subterranean water sources in the way proposed by Johnson. This assertion could not be tested against hydrological data, yet Johnson's "geoglyph code" simply does not work in Palpa. Elements of his proposed code include triangles ("pointers"), trapezoids, zigzag lines, and stone circles (Johnson 1999: 160). In Palpa, only two true triangles were found. Small trapezoids, though similar in shape, have an open narrow end and therefore do not point anywhere in the way proposed by Johnson. Johnson further proposed that zigzag lines indicate absence of water, while trapezoids map major water flows. It has been shown that both types of geoglyphs in Palpa usually occur together with the trapezoid superimposed on the line. Thus, both markers would contradict each other. Finally, the stone circles and rows mentioned by John-

son are present in Palpa, but they are of modern origin. The circles are not visible on old SAN aerial images. One stone out of a row of stones on Cresta de Sacramento was placed on car tracks. Beneath a stone of another circle in San Ignacio we found an electric cable. Thus, although the origin and function of the stone circles is unknown, they are clearly not related to prehispanic geoglyphs, and thus were not mapped by the Nasca-Palpa Project.

All in all, the Palpa geoglyphs seem indeed to be related to water, but not necessarily in terms of their placement on the landscape. Rather, objects evoking concepts of water and fertility were placed along geoglyphs. Thus, this important aspect of the Andean model finds corroboration in the Palpa data.

7.6 GEOGLYPHS USED AS ROADS

Based on structural similarities between geoglyphs and Inca roads (Hyslop 1984), it has been suggested that some straight geoglyphs on the Nasca *pampa* were used as roads or paths for the traffic of people and goods⁶⁸. A review of available evidence for walking over the geoglyphs on Cresta de Sacramento, Cerro Carapo, and around La Muña indicates that in the Palpa region this activity was not related to traffic. Here, the geoglyphs did not form pathways leading from one settlement zone to another. Many of them were placed in terrain not suitable for walking. Although people traveling through the area might have used some stretches of geoglyphs as paths on occasion, this was clearly not their primary purpose. Rather, there seems to have existed a separate set of roads and paths for inter- and intra-valley traffic, although evidence is sparse due to long lasting reuse.

In the area around Palpa, some paths of prehispanic origin that are not used any longer have been found during fieldwork in several locations. They usually lead up from the valley margins to prehispanic sites on plateaus like geoglyph sites or settlements from the Late Intermediate Period. Prehispanic potsherds, in most cases covering different epochs, are scattered along their course. Unlike modern trails through the desert that are formed simply by traveling frequently over them, most of these paths tend to be wider and seem to be the result of an actual construction process. These ancient pathways have been studied in the framework

⁶⁸ Clarkson 1990; Silverman 1990a; Urton 1990.

of the regional settlement survey and will be reported on elsewhere. Inter-valley traffic routes, on the other hand, did not necessarily pass through the desert. As old maps (Mejía 2002: 209) show, the main road between Palpa and Ingenio ran alongside the rivers before the Panamerican highway was built.

The absence of evidence for a use of geoglyphs as roads includes pilgrimage routes that lead toward a ceremonial center. Silverman suggests such special kinds of travel for the Nasca *pampa* (Silverman 1990a, 1994a), and hypothesizes that the group of people shown in a famous clay model in the Museo Nacional de Antropología, Arqueología e Historia, Lima (Silverman/Proulx 2002: xx), may have been pilgrims. The Palpa geoglyphs did not serve as traffic roads, and no musical instruments like the panpipes played by the people shown in the clay model were found on them. But, this does not mean that Silverman is wrong. The topographic setting between Río Ingenio and Río Nasca suggests that the easiest way to travel between both valleys was by crossing the Nasca *pampa*. Thus, traffic across the *pampa*, be it as part of a pilgrimage or for other purposes, must have existed, and it is assumed that there was a network of paths or roads serving this purpose that may have been similar to geoglyphs. Even though a distinction between both features seems difficult on the basis of available data, a thorough documentation of the *pampa* geoglyphs may still shed light on this problem.

To sum up, the Palpa geoglyphs were not used as roads or paths through the desert. However, considering the different topography, it is plausible to assume that traffic routes (possibly used by pilgrims and others) ran through the Nasca *pampa*. This aspect of the Andean model is clearly tailored to explain the situation on the Nasca *pampa* and can be better assessed only if new field data becomes available from that area.

7.7 SUMMARY: THE ANDEAN MODEL AND THE PALPA GEOGLYPHS

The above review shows that archaeological data from the Palpa region is generally in accord with central assumptions of the Andean model, even though it corroborates only some of them. This was to be expected, however, since not all of its aspects can be assessed by archaeological means. The purpose of an explanatory model is just to explain intangible factors missing from

the archaeological record. Generally, the Andean model fulfills the purpose of explaining the Palpa geoglyphs in a wider historical and cultural context quite well. Building on Andean traditions documented by other means, for other time periods, and in other areas, a conceptual framework is established in which the archaeological evidence from Palpa can be explained in terms of function and meaning.

In spite of the Andean model's general applicability to the Palpa data, there are also gaps and incongruities caused by the fact that the model was developed specifically for the *pampa* geoglyphs as opposed to the valley geoglyphs. As mentioned above, the existence of line centers and roads on the Nasca *pampa* is due to the specific topographical setting there with its exceptional vast plain that has no counterpart on the rather narrow ridges of Cresta de Sacramento and Cerro Carapo in the Palpa region. On the other hand, there are peculiarities in the Palpa archaeological record such as the many anthropomorphic figures that are so far largely unknown on the Nasca *pampa*. The Andean model does not cover these early manifestations of the geoglyph complex. In the framework of SLSA's Paracas Project, the Palpa figures are currently being investigated by Markus Reindel and Johny Isla in more detail than the present study.

Finally, the following is a more general assessment of the way the Andean model was developed and described by some of its main protagonists. Important terms used in the Andean model are in Quechua (like *huaca*, *ceque*, *ayllu*) and have been borrowed from historical sources that describe Inca concepts. Though some of these terms have been used in the present study as well, their use in Nasca archaeology seems generally questionable as they imply, whether intended or not, a very close relationship between societies separated from each other by several centuries, different environmental conditions, and major historical disruptions. It has rightly been cautioned that

“[...] we run a risk of finding only Inka-analogous designs if we project Tawantinsuyu [...] too vigorously into Andean antiquity.” (D'Altroy/Schreiber 2004: 255)

A possible solution would be to stay with non-Quechua terms when referring to certain concepts. Even though the concepts originate in an Inca context, it should be possible to describe them using more neutral terms. Such a procedure may prove more cumbersome, but it might

facilitate alternative views on the geoglyph phenomenon.

The Andean model is useful for the explanation of most of the geoglyphs that we currently know in terms of function and significance. However, it is still an explanatory model that has to be questioned and tested once new data becomes available. The investigations conducted by the Nasca-Palpa Project offered the first chance to test hypotheses elaborated after

the last major wave of geoglyph research in the 1980s and afterwards. Future geoglyph research in other regions, *e. g.* along the southern tributaries of Río Grande, is likely to reveal additional aspects of the geoglyph phenomenon that are not yet known and cannot be explained by currently available hypotheses. Clearly, further work is needed. The more evidence that becomes available the better the Andean model can be assessed.