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Lambers, Karsten

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Deutsches Archäologisches Institut, Zentrale, Podbielskiallee 69–71, 14195 Berlin, Tel: +49 30 187711-0
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2. The geoglyphs in the Nasca region

In this section, the geoglyphs and their environment are described, and current knowledge regarding their cultural context is briefly summarized.

2.1 DEFINITION AND DESCRIPTION

The commonly used term “Nasca lines” refers to ground drawings or markings that cover many slopes and plateaus in the desert of the Nasca drainage along the foothills of the Andes (fig. 2). Archaeologically these features are called “geoglyphs”, a modern composite based on Greek *gē* = “earth, ground” and *glyphō* = “carve, cut out, engrave” (Liddell/Scott 1996: 347, 353). Thus, literally “geoglyph” means “ground carving”. As will be shown later, this designation is not altogether fitting, since most geoglyphs were

not actually carved into the ground surface. Nevertheless, the term is widely used nowadays and is at any rate more appropriate than the term “Nasca lines” that misleadingly implies a linear shape of all geoglyphs.

Geoglyphs can be found in many arid environments along the pacific coast of the American continent, from California to northern Chile (Clarkson 1999). However, the densest concentration and the highest number of geoglyphs is located in the Nasca area on the south coast of Peru. In this study, the term “Nasca geoglyphs” is used to denote all prehispanic ground drawings in the Nasca drainage, while “Palpa geoglyphs” refers to the subset of the Nasca geoglyphs located in the vicinity of the modern town of Palpa.

Geoglyphs are usually located in a rocky desert environment, which is due to require-



Fig. 2. Geoglyphs along the northern edge of the Nasca *pampa* (center: Panamerican Highway, upper left: Río Ingenio).

2. The geoglyphs in the Nasca region

Fig. 3. A straight line marked into the desert pavement of the Nasca *pampa*.



Fig. 4. A geoglyph complex on the northeastern edge of the Nasca *pampa*.

ments imposed by their construction technique (fig. 3). The Nasca drainage provides many suitable spots to place geoglyphs. It is circumscribed by the foothills of the Andes to the northeast and the coastal cordillera to the southwest (Eitel et al. 2005). This coastal cordillera is a unique topographic feature which distinguishes the Nasca area from other coastal valleys to the north and south. Its presence led to the development of a large basin that was filled in during the Pleistocene with alluvial sediments composed of sands of different grain size, small to middle-sized stones and rocks, and large boulders. During the Upper Pleistocene, this pediment was cut by rivers running from the Andes to the sea, forming the green oases still visible today. Since the coastal cordillera blocks the rivers from reaching the sea, they join together on its eastern flank to form Río Grande. This is the only river in the Nasca basin with perennial runoff and therefore the only one that cuts through the coastal cordillera.

The beige ridges and plateaus that form a sharp contrast to the green river oases are usually called *pampas*. On their surface, the loose sand between the stones has been blown away by wind erosion, leaving behind a thin, but dense layer of oxidized stones called desert pavement. The vast *pampas* covered by this pavement are ideal drawing grounds that allow the construction of geoglyphs. Thus, the dense concentration of geoglyphs in the Nasca basin, in contrast to other valleys to the north and south, can be explained in part by the unique topographic setting in that region.

To construct a geoglyph on the flat plateaus, the stones of the desert pavement were removed from one place thereby revealing the bright sandy layer below. Piling the dark stones up at another place, usually along the outlines of the cleared areas, further enhanced the contrast in color and brightness between the original and the altered surface. On the valley walls, where the rivers have cut through the sediments, the construction of geoglyphs often required more labor investment since the stone cover is in many cases discontinuous. Here, in order to make a geoglyph, sometimes a part of the sediment had also to be removed – which comes closer to engraving or carving than the geoglyphs on the plateaus – and the excavated melange of sand and stones was heaped up along the furrow.

In any case the making of a geoglyph was technically a relatively simple task requiring only an investment of labor. That is why smaller

geoglyphs are still made today. The most prominent, found along the valleys, are advertising drawings promoting private companies, political parties, or government agencies. The plateaus close to the valleys are equally covered with modern graffiti such as the names of individuals, imitations of ancient geoglyphs, etc. Those modern geoglyphs are easily distinguishable from the prehispanic ones.

The predominate kind of prehispanic geoglyph found on the large flat plateaus is a cleared area often in trapezoidal or rectangular form. It is in most cases accompanied by lines running straight or bending several times, forming zig-zags, meanders or spirals (figs. 2, 3). Lines and (smaller) trapezoids are also common features on the slopes of valleys and hills. Biomorphous figures like birds, whales, human beings, etc. constitute by far the smallest fraction of the whole corpus, yet at the same time they are the most famous geoglyphs. Larger, zoomorphic figures are usually found on flat plateaus, while smaller, anthropomorphic figures are mostly located on slopes. A common trait of the majority of geoglyphs is that they occur together in complexes, often crosscutting each other, with older geoglyphs obliterated by more recent ones (fig. 4).

The geoglyphs are located in a relatively stable environmental setting. The desert pavement exists unchanged, if not anthropogenically altered, since the Upper Pleistocene (Eitel et al. 2005). When a geoglyph was constructed the underlying sandy layer was exposed allowing the silty elements of this layer along with humidity to cause a thin crust to develop on top of this layer. Such a crust, which is able to largely prevent wind erosion of the exposed surfaces, can only develop, however, if the surface remains undisturbed over a long period of time, *i. e.* after human activity on the *pampas* had ceased. Thus, the abandonment of the geoglyph sites permitted their preservation. This is why many geoglyphs are still easily visible today.

Modern anthropogenic activity on geoglyph sites, or on the *pampas* in general, is hence the major threat to which the geoglyphs are exposed. Geoglyphs close to inhabited zones are today often affected by houses or roads built along the valley margins, by corrals constructed on slopes, or by informal soccer fields built on trapezoids, etc. This is the case at least in areas where the geoglyphs are not protected.

Thus far, only the Nasca *pampa* between Río Ingenio to the north and Río Nasca to the south and west has been declared *zona intangible* by

END DATE	PERIOD	ARCHAEOLOGICAL CULTURE	PHASE
1532 AD	Late Horizon	Inca	
1400 AD	Late Intermediate Period	Ica / Chincha	
1000 AD	Middle Horizon	Wari	
600 AD 450 AD 250 AD	Early Intermediate Period	Nasca	Late Middle Early
1 BC		Initial Nasca	
200 BC 400 BC 600 BC	Early Hoizon	Paracas	Late Middle Early
800 BC	Initial Period		
1800 BC	Archaic		

Table 1. Chronology and cultural history of the Nasca basin (dates based on preliminary results of the Nasca-Palpa Project).

the Peruvian government, and later placed on the list of World Cultural Heritage sites by UNESCO. In most other parts of the Nasca area, access to geoglyph sites is unrestricted. That means today many geoglyphs close to modern settlements are in imminent danger of being destroyed, and old aerial photos indeed reveal that many have already disappeared during the last few decades (Aveni ed. 1990: appendix II fig. 6; Fischer/Künstle 1999).

The geoglyphs on the Nasca *pampa*, specifically those along the south bank of Río Ingenio, are now world famous and are constantly flown over by tourists in small airplanes starting from the Nasca airstrip. Thus, the geoglyphs have become an important economic factor in the city of Nasca where many hotels and restaurants have been established in recent decades to host tourists from all over the world. However, geoglyphs in other zones of the Nasca basin are often poorly known, in many cases not even by the local population. They are therefore usually not cared for. Most of the stone cairns associated with geoglyphs have been looted. In general, protecting the geoglyphs outside the Nasca *pampa* is a problematic task since they are distributed over a wide area, difficult to access, and are not easily discernible on the ground. Furthermore, today's population is claiming parts of the terrain covered by geoglyphs as building zones, quarries, waste dumps or agricultural zones.

All in all, the Nasca geoglyphs remain today a prominent feature in the Nasca landscape, but their preservation is a challenging task. The Peruvian national cultural authority (*Instituto Nacional de Cultura*, INC, Lima) has recently commissioned a study of this issue in close cooperation with UNESCO. In that study

(Lumbreras 2000), the geoglyphs, their preservation, their history, their investigation, their importance today, and the threats they are exposed to are surveyed. A master plan has been proposed that aims at the protection and sustainable use of this important cultural resource. Since this master plan is new, it has had as yet only limited impact, but the geoglyph research in Palpa described in this study follows its guidelines closely.

2.2 CHRONOLOGY AND CULTURAL CONTEXT

The geoglyphs are generally associated with the Nasca culture (table 1) which flourished between the 2nd century BC and the 7th to the 8th century AD in the Nasca region and in the Ica valley further to the north (Rickenbach ed. 1999; Silverman/Proulx 2002). It emerged out of the preceding Paracas culture (Paul ed. 1991) in what appears to be a rather smooth transition marked mainly by technological and stylistic innovations reflected in ceramics and textiles.

Ceramics and textiles are still the best known manifestations of both cultures, and a good part of what we know today of Paracas and Nasca is still primarily based on stylistic, technological and iconographical studies of ceramics and textiles distributed over museums around the world². Another source of information are excavations of cemeteries of both cultures undertaken early in the 20th century³.

² Kroeber 1956; Rowe 1960; Menzel et al. 1964; Sawyer 1997.

³ Uhle 1913; Tello 1959; Tello/Mejía 1979; Kroeber/Collier 1998; Isla 2001a; Mejía 2002.

For a long time, practically no solid information was available on both Paracas and Nasca other than what was learned from the cemetery excavations of the last century. In recent years, however, a growing number of research projects have been undertaken, including regional settlement surveys covering all tributaries of the Nasca drainage⁴ and further valleys to the north and south⁵, as well as excavations at important sites like Cahuachi, the biggest site from the Nasca period (Silverman 1993a; Orefici/Drusini 2003), and several smaller sites⁶. Data from many of these projects is still under study, but the results have been limited thus far. However, significant new contributions for both cultures can be expected for the next few years.

Based on current research, during its development the Nasca culture was little affected by foreign influences other than in the late phase. However, it did maintain far reaching trade connections, and its influence can be found in the material culture of adjoining regions, like Pisco and Chincha to the north, Acarí to the south, and the highlands to the east (Moseley 2001: 197 ff).

Nasca economy was essentially based on agriculture which was supported by a highly developed water management system in the valleys (Schreiber/Lancho 2003). Field crops and food procurement played a prominent role in Nasca iconography as depicted on fineware ceramics, along with a pantheon of mythical beings that often showed a combination of human and animal traits (Makowski 2000).

During the course of its evolution, Nasca society was always complex with social and economic hierarchies clearly discernible in the archaeological record. The level of complexity, however, changed through time. In the Early Nasca period, Cahuachi in the middle Nasca

valley became the spiritual and ritual, if not political center of the Nasca drainage (Silverman 1993a). Later, the Nasca sociopolitical landscape became more fragmented. During this period, an increasing concern with internal and external warfare, foreign influence, and changing climatic conditions becomes evident in the archaeological record.

Through all these changes, the inhabitants of the Nasca region maintained a high technological level in irrigation and water management, production of fineware ceramics, adobe architecture, etc.⁷. When at the end of the Early Intermediate Period the Wari empire from highland Ayacucho (Schreiber 1992) extended its area of influence to the south coast, the transition from Nasca to Wari seems to have caused more disruptions than the previous transition from Paracas to Nasca, although some cultural traits seem to have persisted well into the Middle Horizon (Isla 2001b).

Whether the geoglyph tradition continued during the Middle Horizon is still a matter of debate. This cultural phenomenon is generally closely associated with the Nasca culture, while its origins, like that of many Nasca cultural traits, are traced back to the preceding Paracas culture (Silverman/Browne 1991). This cultural affiliation is based on iconographic parallels between biomorphic figures and motifs on ceramics and textiles and potsherds found on geoglyphs. Some geoglyphs, mainly lineal and trapezoidal, have also been tentatively dated to the Middle Horizon or even to the Late Intermediate Period (Clarkson 1990). However, there is little evidence to support this. Thus, there is a general consensus that most of the Nasca geoglyphs were made during the time of the Nasca culture and by the society that sustained that culture.

⁴ Browne 1992; Schreiber 1999; Silverman 2002a.

⁵ Massey 1992; Cook 1999; Velarde 1999; Valdez 2000.

⁶ Isla et al. 1984; Vaughn/Neff 2000; Vaughn 2004.

⁷ Carmichael 1994; Clarkson/Dorn 1995; Orefici 1999; Biermann 2001.