GEOGLYPHS IN TIME AND SPACE

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ABSTRACT

The actual parameters of Earthen Art's spatial distribution in the American Southwest and northern Mexico are now virtually known. The time factor, however, has only recently been coming into clear focus. The advancements made in this department have been through the genius and diligence of Dr. Ron Dorn of Arizona State University, applying a special radiocarbon dating method to desert varnish. The current testing program will include 30 select geoglyphs, ten of which have been sampled already and are undergoing laboratory analyses. The results of five are known, and will be reported in this paper.

As politics is ultimately rooted in economics, art is ultimately rooted in religion. Art underwent an explosion early in the evolutionary rise of *Homo sapiens sapiens* who became particularly drawn to exploring graphically his awareness of spiritual forces and his place in the world they seemingly created. Seen as a cultural product to us, earthen art is part of the creative process toward which the primal mind turned (Highwater 1981; Pfeiffer 1982).

The evolution of earthen art roughly parallels other planar expressions that gradually moved from abstractions remote to human senses to representations that graphically traced the awakening of man's ego, itself a creative force. The trend to representationalism, however, never entirely displaced its older art form whose ideologic content could not be portrayed in realistic plastic shapes and hence remained veiled as imaginative and highly abstract icons.

Within the mode of earthen art there are two basic forms--rock alignments and geoglyphs. The alignment makes a positive image when rocks are arranged into a surface design. Geoglyphs make a negative image when surface pebbles are scraped away forming a line on the denuded soil. Alignments are dependent upon the presence of a field of random boulders and cobbles for resources while geoglyphs are dependent upon an open field of desert pavement. Since the two forms are made from different resources they therefore rarely share the same plane (Brown 1979; Davis and Winslow 1965; Ezzo and Altschul 1993; Holmlund 1993; Hunt 1960; Johnson 1985; von Werlhof 1987). Rock alignments alone, for example, comprise the current inventory of earthen art in the Australian cobbled deserts (Berndt and Berndt 1964; Elkin 1964). Similarly, on the rocky terrain of Panamint Valley in Inyo County, California there are 35 reported rock alignments and no geoglyphs (Davis and Winslow 1965; McCarthy 1990; von Werlhof 1987). On the other hand, geoglyphs dominate the heavily concentrated fields of earthen art on the Peruvian Nazca Plains where cobbles and boulders are scarce (Aveni 1990; Clarkson 1990; Reiche 1955, 1968; Reinhard 1987). As an unusual variant, however, large stones are so profuse on the slopes of the Atacama Desert of Chile that alignments could not have

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been discernible, if made. Here, earthen artists removed boulders to make huge figural designs in geoglyph form on the rock strewn surface (Casey 1990; Morrison 1978; Wilson 1988). On the Yuha Mesa in Imperial County, California, there are 21 geoglyphs scraped through the moderately paved desert surface, but no rock alignments (Casey 1990; von Werlhof 1994).

In western North America, the earthen art field embraces portions of the Sonoran Desert and the Great Basin. Though still inconclusive, geologic dating (Davis et al. 1980) and one ^{14}C date of a rock alignment of over 9000 years BP (Warren and Ore 1978) indicate that this variety is the older of the two earthen art forms. Current studies in geoglyphs tend to support this hypothesis. An extensive field investigation still underway will eventually settle the point. Eleven geoglyphs have now been processed with the cation-ratio AMS ^{14}C method. The oldest glyph dated in this series is over 2700 years BP (Table 1). Five more samples are currently being processed at Woods Hole laboratory.

Table 1

^{14}C Dated Geoglyphs
(samples collected by Dr. Ronald Dorn and Dr. Persis Clarkson, 1993)

1. Schneider Dance Circle	2790	IMP-2491
2. Ocotillo Museum Site	2640	IMP-3045
3. Singer Site, Pilot Knob Mesa	1600	IMP-4978
4. Lizard Figure, Ripley Complex	1560	AZ-R:10:1
5. Anthropomorph, Quartzite Airport	1540	AZ:?
6. Amorphous, Quartzite Airport	1480	AZ:?
7. Anthropomorph #2, Quartzite Airport	1380	AZ:?
8. Anthropomorph, Quartzite Airport	1260	AZ:?
9. Blythe Giant #1	1100	RIV-?
10. Anthropomorph, Pilot Knob	945	IMP-5224
11. Winterhaven, Kumastamho	840	IMP-2990

My paper focuses on the temporal and spatial distribution-the "when" and the "where"-of geoglyphs. By now, the geoglyph population is virtually known for the Great Basin/Southwest study area. Until a scant five years ago, numerous earthen art forms were annually reported through systematic ground and aerial surveys as well as accidental discoveries. During this recent period there was one year in which none was reported at all.

The principal investigators have been Boma Johnson, Bureau of Land Management archaeologist in Yuma, Arizona, myself and Harry Casey, my co-worker who takes time, has dedication and airplanes as well as a professional's gift in photography. The ranks have grown in the last few years, however, and include Dan McCarthy, Meg McDonald, Jeffrey Altschul, Joseph Ezzo, James Holmlund, and Persis Clarkson who is redirecting her field expertise from the deserts of Peru and Chile to include our Southwest. I am working on a proposal with Julie Bendimez, the Cultural Director of Baja California Norte, to extend our field studies into Northern Baja, and possibly into northwestern Sonora, Mexico where Julian Hayden left off his pioneering explorations (Hayden 1976).

So, we know much of the "what" and the "where" of geoglyphs, but need to address more fully the other three questions of "who" formed them, and "when" and "why" were they prepared. Boma Johnson has laid the foundation for the "who" and the "why" through ethnographic research with Colorado River tribes--the Quechan and Mohave (Johnson 1985). Ezzo and Altschul have recently expanded on one of Johnson's hypotheses linking Lower Colorado River geoglyphs with a Yuman *keruk* (mourning ceremony) trail and ceremonial rites. The authors have also tied warring activities and possibly territorial markers to these ground figures and features (Ezzo and Altschul 1993). Holmlund also intensively investigated the Ripley site (AZ R:10:1), a.k.a. the Ripley Geoglyph Complex. Though he is more

cautious with interpretations, he left precious little, if anything, to be discovered visually. Unlike most geoglyph sites, the Ripley complex includes several alignments of the cairn-assemblage type (Holmlund 1993). Similar assemblages have been noted in direct association with alignments of the butted type (i.e., stones are butted together along a line), indicating that in some sites the assemblages were stockpiles whose stones were to be laid out on a linear scheme at some future time (von Werlhof fieldbook 1992). The Ezzo and Altschul model is too site-specific oriented to explain most geoglyphs which in all likelihood predate the *keruk* ceremony and the warring impulse of the Late Prehistoric or Protohistoric periods. In all probability, spiritual roles will eventually be assigned the majority, if not all, these intriguing designs.

A few similar and some identical designs tell us there was at least an ancillary connection between the iconography of rock art and earthen art. Aside from construction methods and planar surfaces the most glaring difference between rock art and earthen art is that the former is universal and the latter is severely regional. Though the "why" of rock art is still largely unknown it is becoming better understood in geoglyphy.

With earthen art, the "who" and the "when" are critically related to one another since each prehistoric society of our study area underwent a major *volkerwanderung* during its Archaic Period, and remained quite mobile afterwards as part of adaptive strategies. In the Protohistoric Period they often mixed warring with trading and traveling (Davis 1961; Ezzo and Altschul 1993; Forbes 1965; White 1974; von Werlhof 1994).

From ethnographic as well as archaeological evidence it is clear that geoglyphs played an active cultural role in tribal life. According to Yuman (Kumeyaay, Mohave, and Quechan) informants such activity was conducted on ceremonial grounds already deemed sacred. These activities included:

(1) Depiction and celebration of the creation myth.
(2) Struggle with anti-social forces, such as Elder Brother in physical triumph over his evil twin.
(3) The mythical past.
(4) *Keruk* ceremony.
(5) Initiation rites for boys, and possibly girls.
(6) Cultural renewal with traditional singing and dancing. In addition to linear and circular dance patterns, there are also staging and monitoring areas, and "hopscotch" scars where jumping dances took place.

The ground figures emphasize the importance of mother earth (Barnes and Davidson 1966) as the source of fertility and power, as seen also in the Natives' care and use of certain rock. They recognized quartz as the most energized of rocks (von Werlhof 1986) which they pulverized to transfer its power to the person seeking the release (Millard 1990). Fine-grained felsite was also reduced in power quests at ceremonial sites (von Werlhof 1982).

As in rock art, the older geoglyph designs are non-representational lines or circles. Though these became traditional, forming a continuum from the past, earthen artists added pictorial elements in later years. The representational figures were mostly of the creator and his pantheon of icons identified in Yuman stories as worm, thunderbird, spider, octopus, lizard, quail, lion, sheep, snake, scorpion, and fish. Sun, Moon, Milky Way, water, arrows, and mountains also took place as permanent cadre against a world of threatening change. The sanctity of the designs and images remained inviolate, with-standing culture change as well as tribal enmity. Earthen art did not suffer the outrages that rock art had to bear through superimposition, deface-ment and even destruction in prehistoric time.

All desert people underwent major migrations. The Yuman speakers apparently moved from central Baja California northward where they gradually settled generalized territories as separate tribal units. The uninterrupted Yuman lands included northern Baja California, San Diego and Imperial Counties, up the Colorado River to

Needles, and eastward below the Grand Canyon and along the Gila River. The current focus of cultural history combines archaeological studies with reconstructed languages (Cachoura 1994; Dyen 1975; Fowler 1983; Laylander 1985; Mithun 1990; Pawley and Ross 1993; Sutton 1992). Within that format, geoglyphs assume the centerpiece of this paper. Recent studies in glottochronology and lexicostatistics indicate that about 4000 BC the Yuman-Cochimi occupied a sector of north-central Baja Califor-nia. By 3000 BC the Yuman had advanced to near the present International Border, and about 1000 BC the "core" Yuman had spread across what is now San Diego and Imperial counties. And by BC/AD the Yuman had moved upriver and eastward along the Gila River (Kendall 1983; Laylander 1985; see Figure 1).

Something yet unexplained happened culturally during the migration. The Yuman bands which either had crossed the Peninsular Range from the inland deserts to the Pacific Coast, or had moved up the coast from Baja California, did not practice earthen art but those that turned eastward onto the desert areas and terraces did.

^{14}C dates on geoglyphs at the base of the Peninsular mountains have been dated at 650 BC, corresponding to the core Yuman dates that glottochronology provides us. Did the Yuman bring geoglyphy as traditional baggage from their Baja California base? They claim to have been created in their now traditional territories, possibly indicating that earthen art was formed in celebration of that accepted event. A people's embracement of a new country (Bowlby 1982; von Franz 1970) has seldom been more complete even after such a slow-paced migration. The creation myths and geoglyph construction of the Yuman tribes center on their adopted lands (Alvarez de Williams 1974; Cline 1979; Ezzo and Altschul 1993; Forde 1931; Johnson 1985; Kroeber 1925; Luomala 1978; Stewart 1983).

The process for geoglyph cation-ratio AMS ^{14}C dating (Dorn 1991) is complex and still controversial to many scientists. The patterned results, however, have not violated common sense or suppositions of archaeological age. Indeed, the calibrated dates approximate the dates archaeologists and geologists had suspected, and they also fit into the glottochronology scenario. When geoglyphs are formed, lichen begins to grow on the exposed rock which desert varnish eventually encapsulates. The subsequent decay of the organism sets off the radiocarbon clock. The critical point is removing the micro-organic remains for the ^{14}C dating process. Table 1 below is of 11 dates from 16 samples sent to Woods Hole laboratory for processing. The dates shown are BP (Before Present), and do not show the plus/minus factor. The plus/minus spread varied from 25 to 60 years for the group of samples.

Four additional geoglyphs are slated for field sampling this fall. These are being selected to provide a wide spread in geographic location as well as suspected age. So far, the radiocarbon dates suggest that these ceremonial sites were developed and used over long periods of time, with elements gradually being added to the core design. This further suggests that the process of glyph making was as important as, and maybe more important than, the product. Together, these points indicate that growth and continuity are essential partners in the making of traditions which, themselves, are vital to the preservation of a culture.

The interfacing study of geochronology and cation-ratio ^{14}C dating programs poses the prospect of revising the developmental line of Yuman traditions and Yuman cultural history. While some scholarly circles raise unanswered questions about both studies, we might ponder the reply a Mohave elder gave to a doubting interrogator about his religion: "If I can't answer your question, maybe something is wrong with the question" (Barnes and Davidson 1966).

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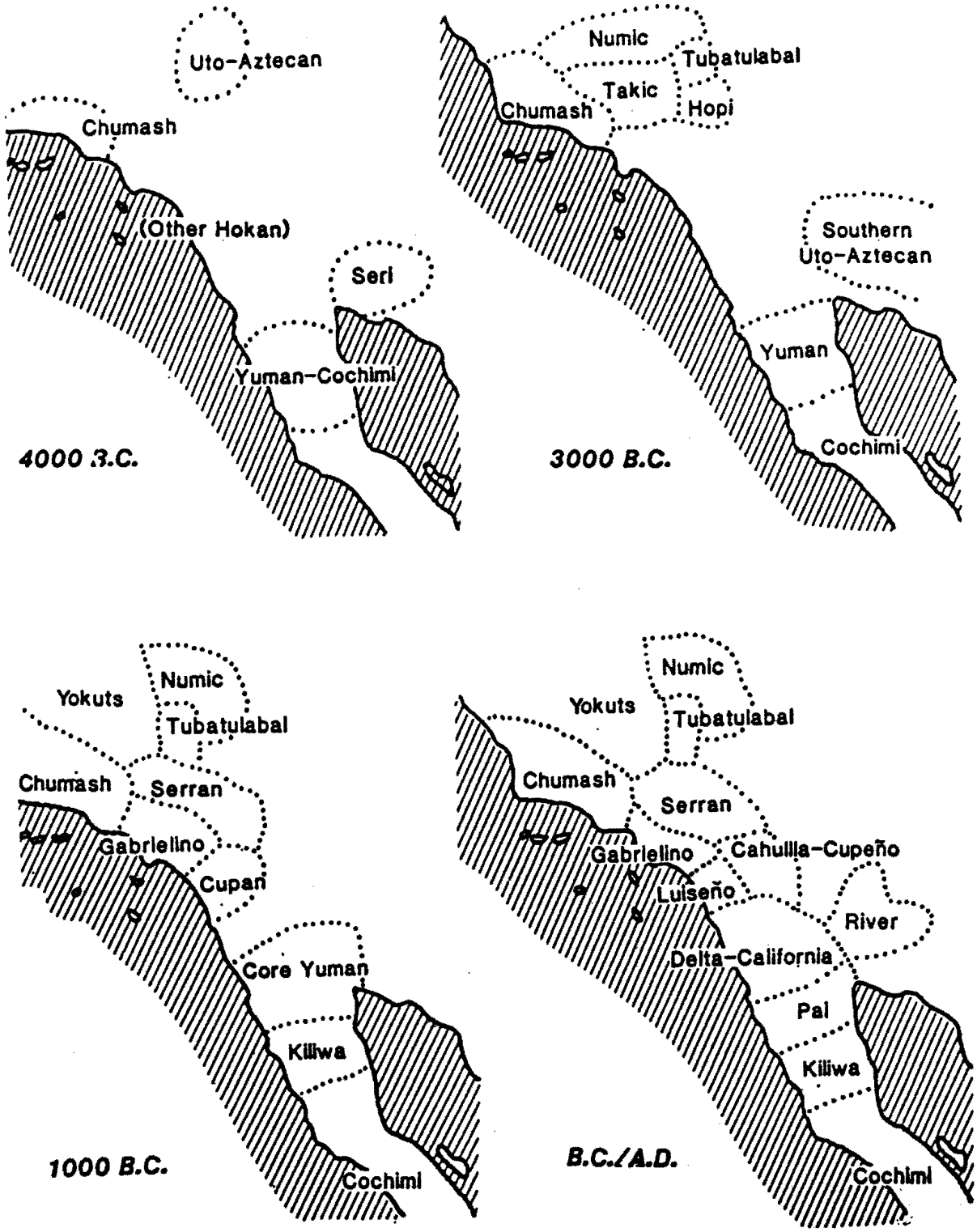

Figure 1. Map of hypothetical stages in southern California's prehistoric linguistic evolution (from Laylander 1984).

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