

The Middle Holocene Western Nexus: An Interaction Sphere between Southern California and the Northwestern Great Basin

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Abstract

The distribution and dating (ca. 5,100 to 4,500 CYBP) of *Olivella* Grooved Rectangle (OGR) beads inspired Howard and Raab (1993) to propose the existence of a Middle Holocene interaction sphere connecting coastal southern California and the northwestern Great Basin, a distance of more than 1,200 kilometers. Based on ethnographic linguistic distributions, they suggested that the two areas were occupied by Northern Uto-Aztecan groups during Middle Holocene times. Subsequent research (e.g., Macko et al. 2005) regarding obsidian sourcing and the distribution of large bifaces and stone spheres, believed to be ritual items, helped to connect the two areas. Here, we propose that lozenge-shaped stone artifacts further define these exchange contacts. We designate this interaction sphere the Middle Holocene Western Nexus and argue that such contacts are too early to have involved Northern Uto-Aztecan linguistic groups.

Introduction

Certain types of southern California shell beads are temporally sensitive (e.g., Bennyhoff and Hughes 1987; King 1990). Numerous examples of the *Olivella* Grooved Rectangle (OGR) bead (Class N; Bennyhoff and Hughes 1987:141-142) have been AMS dated, and all fall between about 5,460 and 4,365 CYBP (Vellanoweth 2001:Table 1), making them good temporal markers. This bead type has been found on the southern Channel Islands and mainland southern California as well as in the western and northern Great Basin (Jenkins and Erlandson 1996). Based on the

distribution of OGR beads, Howard and Raab (1993; also see Raab et al. 1994; Vellanoweth 1995, 2001; Raab and Howard 2002) suggested the existence of a socioeconomic interaction sphere encompassing southern California (excluding the Chumash region) and the western and northern Great Basin (Figure 1). It was also suggested (Howard and Raab 1993; Vellanoweth 1995, 2001; Raab and Howard 2002) that OGR beads are Uto-Aztecan marker artifacts in western North America, and Raab et al. (1994:254; also see Byrd and Raab 2007:221; Kennett et al. 2007) proposed that the OGR type might reflect the movement of the Takic Gabrielino (Tongva) ca. 4,800 BP.

Additional lines of evidence supporting a southern California/northwestern Great Basin interaction sphere have recently been identified, including stone spheres found in both coastal southern California and Oregon and large bifacial blades of exotic materials, including one obsidian specimen from Orange County sourced to the northwestern Great Basin (Macko et al. 2005; also see Macko 1998). We agree with Howard and Raab (1993) that an interaction sphere, which we herein designate the Middle Holocene Western Nexus, connected coastal southern California and the northwestern Great Basin during the Middle Holocene,

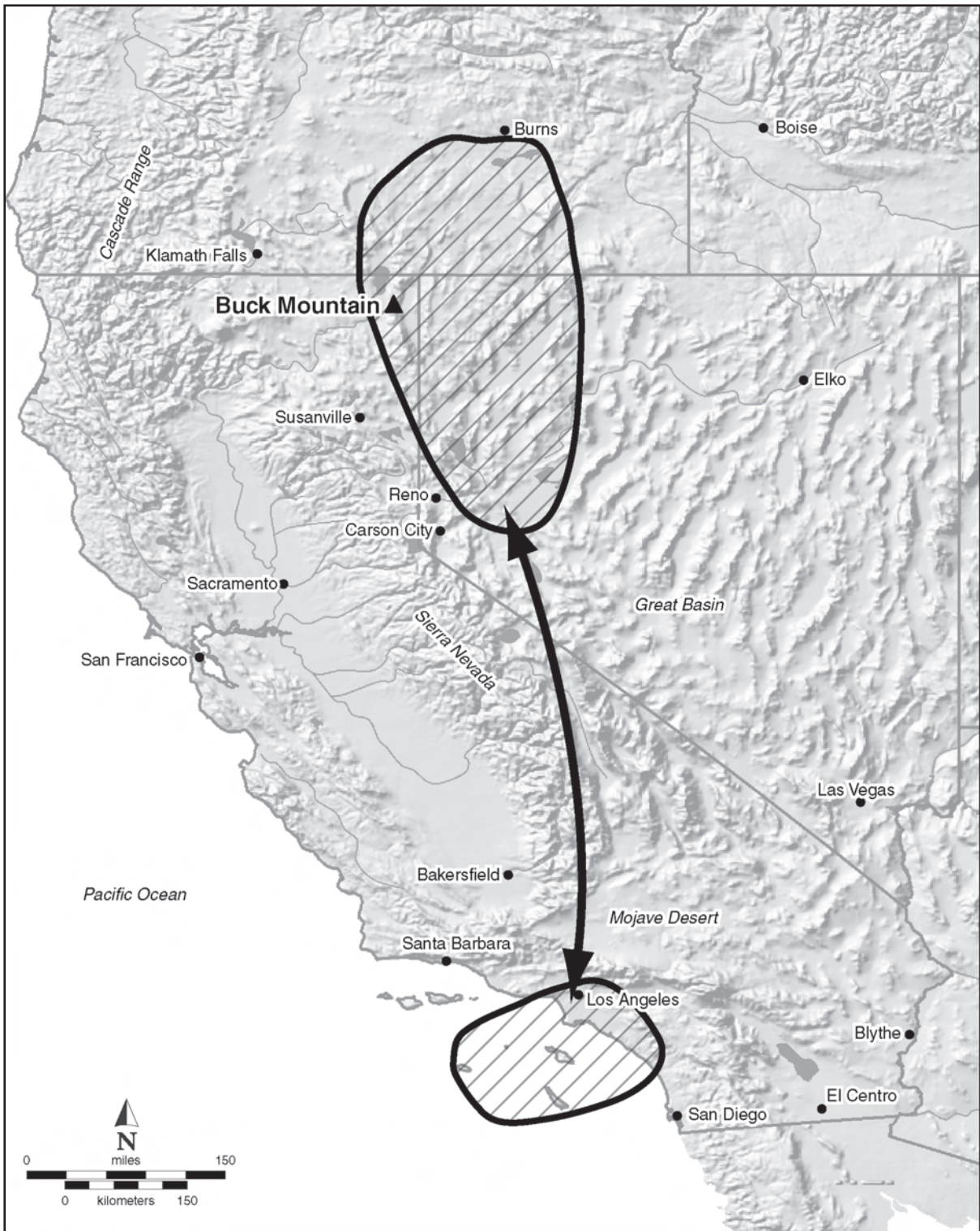


Figure 1. Proposed geographic foci of the Western Nexus in western North America.

although the nature and implications of such an entity are far from clear.

The Western Nexus Artifact Constellation

Three major artifact types have been associated with the Western Nexus: OGR beads, stone spheres, and large bifaces. An additional artifact type, a lozenge-shaped stone (henceforth “lozenge stone”), is herein proposed to be a fourth associated type. Each of these categories is discussed below.

Olivella Grooved Rectangle Beads

The first artifact type identified with ties to both coastal southern California and the Great Basin was the OGR bead (Howard and Raab 1993; Raab and Howard 2002). This bead type (Figure 2) was described as a “rectanguloid to oval bead with ground edges and an elongate perforation formed by a central groove transverse to the long axis of the shell” (Bennyhoff and Hughes 1987:141). Both large (N1) and small (N2) variants of the bead were defined by Bennyhoff and Hughes (1987:141-142).

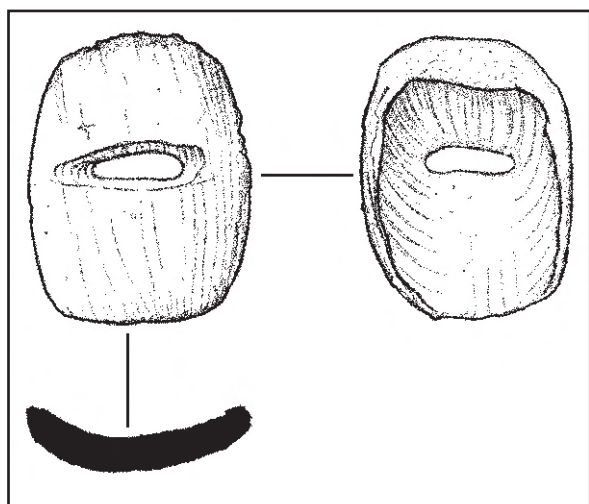


Figure 2. The *Olivella* Grooved Rectangle bead (redrawn from Bennyhoff and Hughes 1987:Figure 8ee). This specimen is about 1.5 cm wide.

This type of bead has been found at a number of sites in western North America (Figure 3). They are known from a number of sites on the southern Channel Islands (San Nicolas, Santa Catalina, and San Clemente) (King 1990:111; Howard and Raab 1993:2-7; Vellanoweth 1995; Raab and Howard 2002:Figure 1), in Orange County (King 1990:111; Howard and Raab 1993:2; Macko 1998:95, Figure 42; Cleland et al. 2007:247-248), in Los Angeles County (King 1990:111; Howard and Raab 1993:2), in mainland Santa Barbara County (Bennyhoff and Hughes 1987:142; King 1990:110; Vellanoweth 1995:14; Kennett et al. 2007:546), and in the southern San Joaquin Valley (see discussion in Kennett et al. [2007:546]). Additional examples have been recently found in the northern San Joaquin Valley (W. Hildebrandt, personal communication 2009).

In the western Great Basin, OGR beads have been recovered from a number of locations (see discussions in Pendleton 1985:243; Raab and Howard 2002:592; Kennett et al. 2007:Figure 15.4), including Hidden Cave (Pendleton 1985:242-243, Figure 78) and Lovelock Cave (Grosscup 1960:38). Several OGR beads were also discovered at the DJ Ranch site (35LK2758) in south-central Oregon, in the northern Great Basin (Jenkins and Erlandson 1996).

The dating of these beads is of critical importance. In the central portion of the western Great Basin, OGR beads found at several sites were thought to date from about 4,000 BP to as late as protohistoric times (Bennyhoff and Hughes 1987:142). In southern California, OGR beads have been dated by associated radiocarbon assays between about 5,100 and 4,500 CYBP (Howard and Raab 1993; Raab and Howard 2002). The specimens from Oregon were similarly dated to approximately 4,700 CYBP (Jenkins and Erlandson 1996). To eliminate any ambiguity, Vellanoweth (2001) directly AMS dated eight OGR specimens from southern California, western Nevada, and southern Oregon, and all fell between ca. 5,460 and 4,365 CYBP, firmly establishing the age of this bead type.

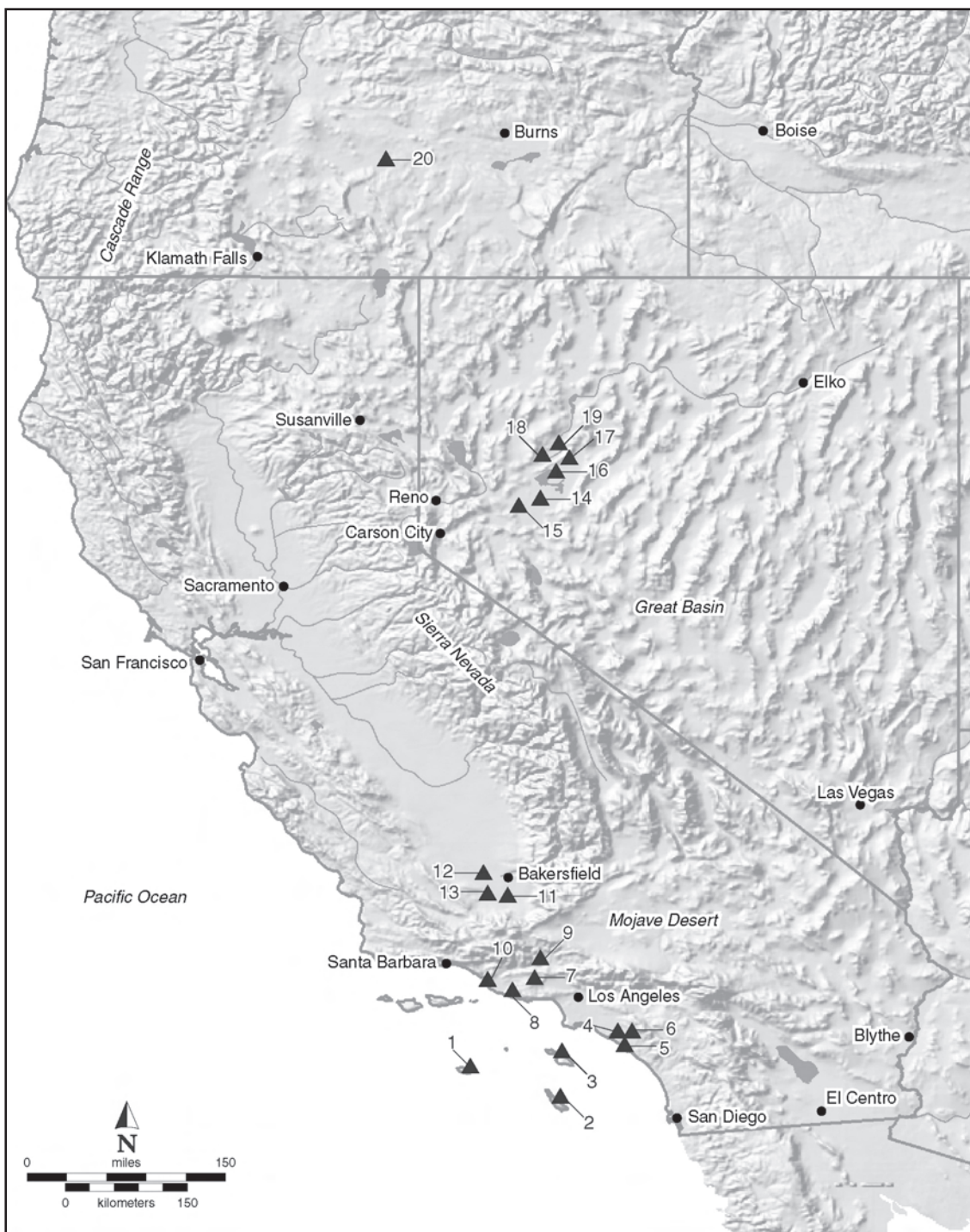


Figure 3. The distribution of *Olivella* Grooved Rectangle beads in western North America (based on Kennett et al. 2007: Figure 15.4): (1) CA-SNI-351; (2) CA-SCLI-1215; (3) CA-SCAI-17; (4) CA-ORA-368; (5) CA-ORA-667; (6) CA-ORA-665; (7) CA-LAN-43; (8) CA-SBA-119; (9) CA-LAN-361; (10) CA-SBA-3404; (11) CA-KER-3079/H, -3166/H, and -5404; (12) CA-KER-2720; (13) CA-KER-824; (14) Stillwater Marsh; (15) Hidden Cave; (16) Silverwater Marsh; (17) Lovelock Cave; (18) Shinners Cave; (19) Kramer Cave; and (20) DJ Ranch.

Many of the known OGR beads have been found on San Nicolas Island, and Vellanoweth (1995:18) discovered evidence (bead detritus, unfinished specimens, and tools) indicating that they were manufactured there. This led Vellanoweth (2001:946) to argue that OGR beads “were produced, exchanged, and transported over a relatively short period of time during the Middle Holocene.” The decline of bead quantities from south to north suggested to Vellanoweth (2001:946) that this bead exchange fit a down-the-line model that proceeded northward either through California’s Central Valley or through the Owens Valley in the western Great Basin.

In terms of their function, at least some specimens were strung, as indicated by the discovery of two small intact strands of OGR beads in Lovelock Cave (Grosscup 1960:38; Orchard 1975:Figure 10). It is also possible that OGRs were used for appliqué or as sequins (King 1990:112). They may also have been employed for wealth display (King 1990:112).

Stone Spheres

Stone spheres, sometimes called stone balls or ball stones (Figures 4-6), have been reported from a number of sites in western North America (Figure 7) and have a wide diversity of diameters. Broms and Moriarty (1967) observed that smaller spheres tended to be more roughly made and were more likely to have been employed as game accouterment. Larger ones, they believed, were generally better finished and probably of ceremonial function (Broms and Moriarty 1967:107). We agree that size (including weight) is less important than the quality of finish and that small, roughly made spheres would most likely be game pieces while well-finished spheres of any size would more likely be ritual in function. It is true that many smaller spheres were expertly crafted and that their final dispositions appear to have been sacred venues. In other cases, poorly finished stone spheres have been interpreted as millstones (e.g.,

Greenwood 1969:25, 28, Figure 17). For the purposes of this paper, however, the focus is on those stone spheres that were carefully finished (Figures 4 - 6), representing items unlikely to be mundane in function.

Ford (1887:15) described a grave associated stone sphere from the Carpinteria area just south of Santa Barbara as “beautifully rounded” and apparently large, as the diameter was about that of a “medium sized mortar.” In Ventura and Los Angeles counties, stone spheres have been found at a number of Encinitas Tradition age sites, but all were roughly finished (Treganza and Malamud 1950:150; Greenwood and Browne 1963:481; Rosen 1978). At Porter Ranch (CA-LAN-407), Walker (1951:23) discovered two large sandstone spheres, each about “12 inches” (300 mm) in diameter. Although neither of these specimens was well finished, their similar size suggests a matched pair; if so, a ritual function may be indicated. It is also possible that the two spheres were left in an unfinished state, perhaps to be finished at a later time.

In Orange County, eight granite stone spheres were discovered by a Works Progress Administration (WPA) crew at the Banning-Norris site (CA-ORA-58; Dixon 1968, 1970; Koerper et al. 1996). A group of three specimens, two “spherical” and one “ellipsoid” (66, 67, and 67 mm), was found with a child burial (Anonymous 1937a; also see Koerper et al. 1996:18-19; Macko et al. 2005:100). A second aggregate of three granite spheres (60, 60, 61 mm) was discovered in a nonmortuary cache (Anonymous 1938:2). A seventh granite “stone ball,” 67 mm in diameter and oval but slightly flat in one place, was also noted (Anonymous 1937a). It was originally reported that this specimen was burial associated (Koerper et al. 1996:18; Macko et al. 2005:100), although later evaluation indicates that this may have been in error. Finally, a perfectly round 63 mm granite sphere was unearthed absent any burial association (Anonymous 1938:10). The presence of two sets of three matched spheres is most intriguing. Six additional stone spheres

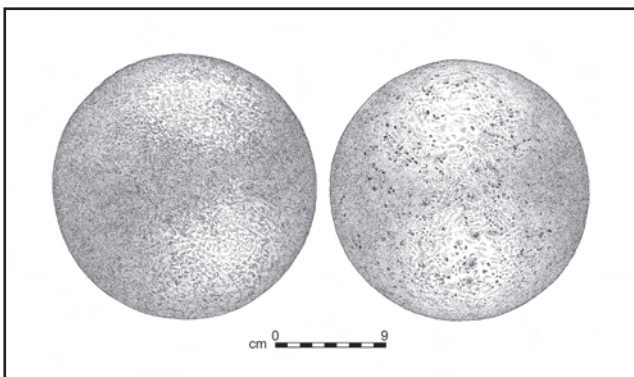


Figure 4. Two large stone spheres from a cache at CA-ORA-64 (reprinted from Koerper et al. [2006:Figure 6g], courtesy of Coyote Press).

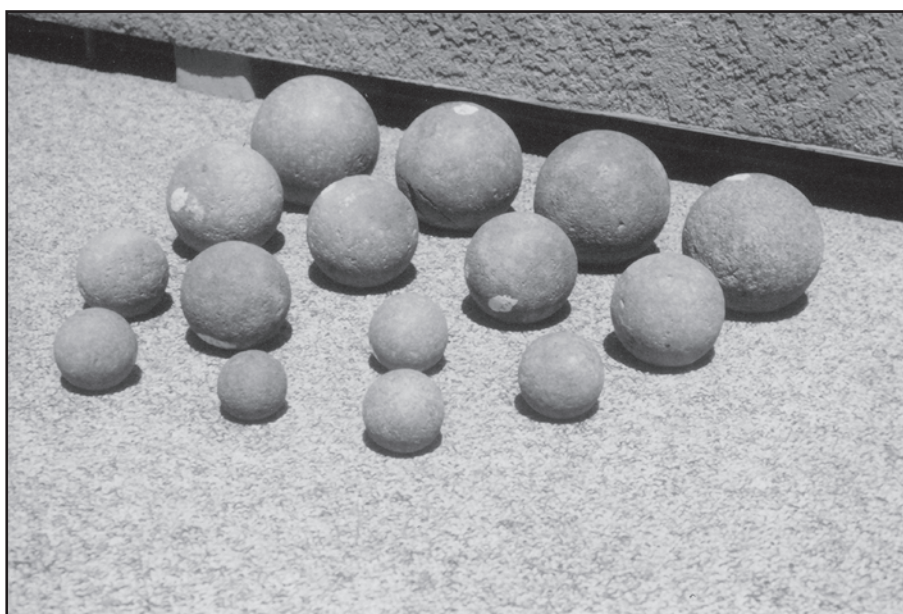


Figure 5. Fifteen of 16 basalt spheres (see Table 1) from the Christmas Lake cache, southeastern Oregon. This grouping has passed into the hands of a private collector unrelated to the original discoverer (photo by HCK).



Figure 6. Specimen 418 from the Christmas Lake cache, collected in the 1950s by Leroy Gienger of Chiloquin, Oregon (photo by HCK).

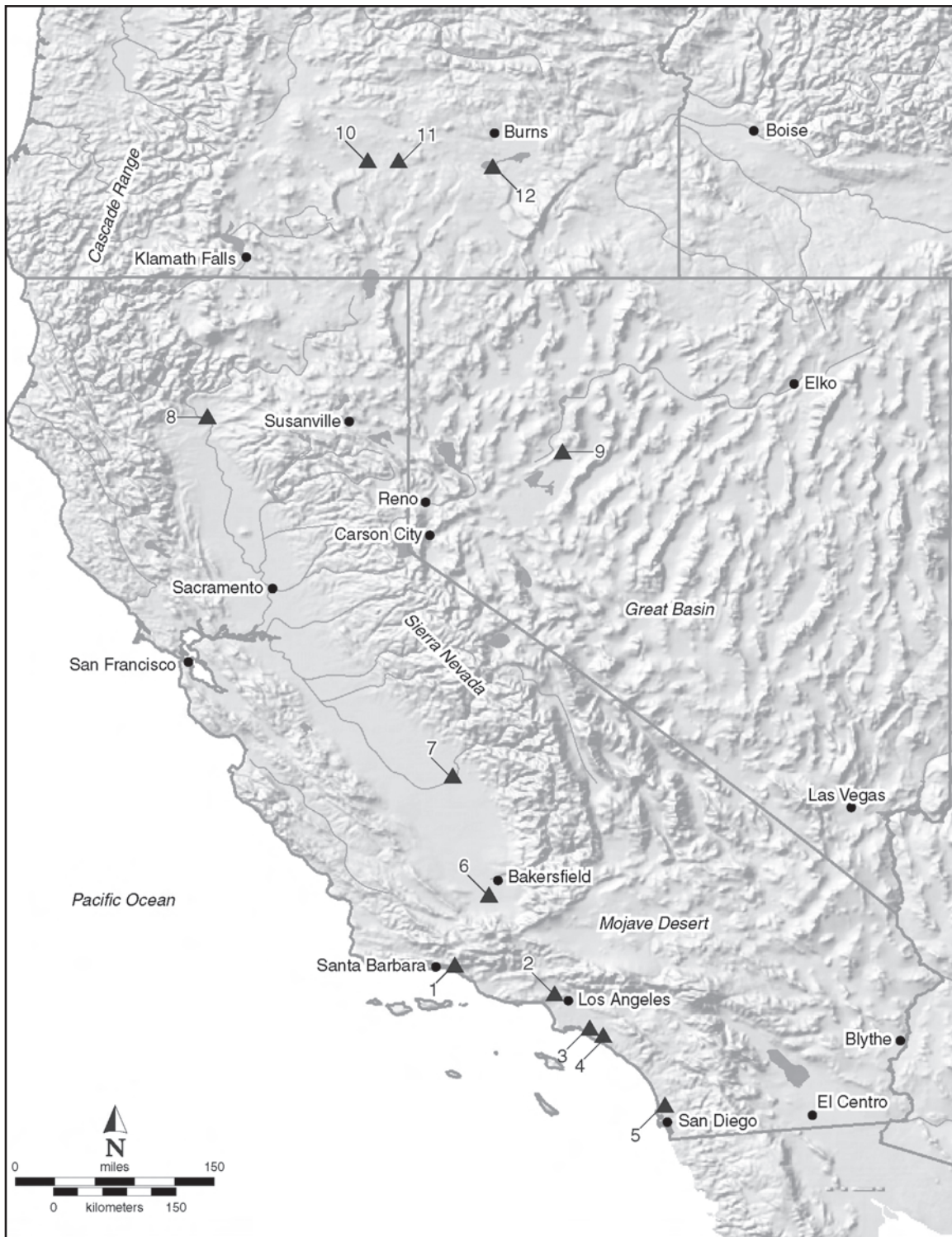


Figure 7. Distribution of well-finished stone spheres in western North America: (1) Carpenteria; (2) Porter Ranch; (3) Banning-Norris; (4) CA-ORA-64; (5) Scripps Estate; (6) Buena Vista Lake; (7) Kings River; (8) Redding Mound; (9) Lovelock Cave; (10) Bowling Dune; (11) Christmas Lake Valley; and (12) Malheur Lake.

from the site were so poorly described (Anonymous 1937b) that they are difficult to evaluate.

The single largest concentration of stone spheres ($n = 70$) is from the Irvine site (CA-ORA-64; Drover et al. 1983; Macko 1998). Dating between ca. 9,400 and 4,300 CYBP (Drover et al. 1983:Table 1; Macko 1998:41; Erlandson et al. 2005:Table 1), CA-ORA-64 is among the earliest shell middens on the west coast (see Erlandson et al. 2005). One of the spheres was reported by Drover et al. (1983:17) to be 67 mm in diameter, while 67 other specimens found by Macko (1998:115, Figure 48) ranged in diameter between approximately 50 and 130 mm. Two others found together in a cache were virtually identical in size at 210 and 213 mm in diameter (Macko 1998:Figure 47) (Figure 4). It is not known if any were found in direct mortuary contexts. Although none of the spheres from CA-ORA-64 are specifically dated, the terminal date of the deposit is 4,300 BP, meaning the spheres are at least that old.

Nine stone spheres were reported from the Scripps Estate site (CA-SDI-525; Shumway et al. 1961:58, 85), located along the coast north of San Diego and dating between 7,300 and 5,500 BP. Eight of the stones were found in 1953 and were “almost perfectly spherical sandstone balls, with diameters of 6 to 10 cm.” (Shumway et al. 1961:58). A ninth, somewhat asymmetric (75 x 81 mm), sandstone specimen was found in the same area as the others, with the surface showing evidence of pecking and grinding (Shumway et al. 1961:85, Figure 26). Other stone spheres have been reported from Encinitas Tradition contexts in interior San Diego County (True 1958:259; 1980:27, Table 2, Plate 8) but were too poorly described to consider here.

Stone spheres have also been recovered in the Central Valley of California (Latta 1977:455). Ten spheres were found at sites in the Buena Vista Lake area (Wedel 1941:68, Plate 43), ranging in diameter between 30 and 110 mm, with most being under about 50 mm.

These were interpreted as game stones (following Latta 1977:455), but their number and size range are intriguing. Further up the valley, a cache of six stone spheres, approximately the size of “billiard balls” (typically about 60 mm in diameter) and of unknown quality, was discovered along the Kings River and were interpreted as game stones (Latta 1977:455-456). Still further north, two carefully fashioned stone spheres were excavated at the Redding Mound 1 site (CA-SHA-47) on the Sacramento River just south of Redding (Smith and Weymouth 1952:38). Both were well made and measured 57 and 71 mm in diameter.

In Nevada, six small stone spheres were found in Lovelock Cave (Loud and Harrington 1929:113, Plate 57). They measured between about 13 and 40 mm, were symmetrically finished, but were not polished. Found in the lower levels of Lovelock Cave, these specimens co-occurred with OGR beads, a large (270 mm) “flint” biface “classed with the ceremonial blades of northwestern California” (Loud and Harrington 1929:108, Plate 55a), and lozenge stones (see below).

A number of stone spheres has been reported in Oregon, all within 150 km of each other. A cache of six spheres, large and well-finished, was unearthed at the Bowling Dune site in the Fort Rock Basin of south-central Oregon (Jenkins 2004:130, 132-133, Figure 11). The site takes its name from these spheres, which had diameters of 90, 86, 76, 70, 70, and 63 mm (D. Jenkins, personal communication 2008). It seems apparent that at least one matched pair is present. Based on stratigraphy, Jenkins (2004:132) estimated the age of the cache to be greater than 3,000 years.

Two additional caches of stone spheres are known from south-central Oregon. One was a cache of five poorly finished stones that was found in the Warner Valley near the California/Nevada/Oregon border (Howe 1969:73, Figure 62). The other consisted of 16 well-finished basalt spheres (one is now missing)

found by Leroy Gienger of Chiloquin, Oregon, in the Christmas Lake Valley, a short distance east of Fort Rock Valley (Howe 1969:73, Figure 61; also see Strong 1969:161, Figure 98). This latter cache, called the Christmas Lake cache (Figure 5), currently resides in a private collection in northern California. One of us (HCK) examined these 15 artifacts in July 2008.

The Christmas Lake spheres (Figures 5 and 6, Table 1) exhibit remarkable symmetry. The artisan or artisans had expended considerable effort to smooth the surfaces, in some cases nearly effecting a polish. Detractions from this degree of finish are small natural vesicles that give a pockmarked appearance to some of the artifacts. These small cavities had formed when vapor or gas expanded prior to solidification of the molten rock. Most of the spheres are medium to light grey in color. One of them (No. 426, see Table 1) exhibits cracks and a divot indicating heating in a fire.

Single stone spheres were also found at two sites around Malheur Lake, one on the east side of the lake and the other on the west (Oetting 1990:197). Each was crafted of basalt, and they were virtually identical, being nearly perfectly round spheres measuring 128 mm (2,787 g) and 129 mm (2,793 g). The striking similarity of these two pieces suggests that they were perhaps a matched pair at one time, or at least made by the same artisan.

Spheres reported from Oregon have been placed in the Middle Holocene Bergen period, which developed in different basins between 6,000 and 5,500 BP. The Bergen period, lasting to 3,000 BP, experienced increased moisture and was a time characterized by greater resource distribution and increasing social complexity, evidence of which includes expansion in the types and quantities of trade and artistically embellished artifacts. Stone balls are counted among such artifacts (Jenkins et al. 2004a:16, 18, 2004b:269).

Specimen No.	Minimum Diameter (mm)	Maximum Diameter (mm)	Weight (g)
416	58.2	59.8	280
415	66.2	67.6	389
421	71.3	71.8	471
418	71.8	72.2	485
414	72.4	73.1	542
419	86.8	89.0	824
413	101.2	102.5	1,317
423	101.3	102.1	1,398
412	106.2	107.9	1,680
417	113.1	114.6	1,783
422	121.4	122.8	2,221
424	133.4	135.6	3,059
425	141.4	143.4	3,994
426	142.4	143.8	4,349
420	149.8	150.6	4,491

Table 1. Attributes and metrics of basalt spheres from the Christmas Lake cache, Oregon.

Stone spheres present interpretive challenges. Some of the very small ones may have served as sling stones, while others may have been used in play behaviors that involved tossing, juggling, kicking, or guessing (e.g., Culin 1907:561-714). The medium and large specimens, however, seem too massive to have been kicked or juggled, although it is possible that some of them could have been rolled in some game or other activity.

Well-finished stone spheres have been found in a number of caches, sometimes in size-matched pairs or triads. Spheres of nearly identical sizes bespeak highly skilled craftsmen with measuring instruments. A matched pair or triad suggests manufacture by a single artisan. The symbolic meaning of such size selection remains an enigma. The wide variation in sizes indicates to the authors that many stone spheres were not gaming pieces. The sites containing stone spheres all appear to date to the Middle Holocene, although firm dating is lacking for several of the caches. This is consistent with the general dating of the other associated artifact types within the Western Nexus.

Large Bifaces

Large bifaces, generally in excess of about 100 mm, resembling spear points more so than knives, and with a variety of base styles, are unusual in coastal southern California. They are sometimes called oversized projectile points. Abbott (1879:49-50, Plates I and II) argued that such oversized bifaces were unlikely to have been used as weapons.

The want of strength in such slender blades would seem to forbid these in warfare, for while admirably adapted for thrusting into the body of a man or animals, with fatal effects, it is doubtful they could be withdrawn unbroken; . . . they could scarcely afford to produce so elaborate an implement for purposes that

would almost certainly destroy it the first time it was used [Abbott 1879:49].

Any oversized, well-finished, spear-like biface is almost certainly associated with some sort of ritual or sacred activity. This interpretation is reinforced when such bifaces are found in caches and/or in association with other ritual materials. Excellent examples are two biface caches found at CA-ORA-64 (Macko 1998:44-53; Macko et al. 2005) near Newport Bay. Each cache (Figures 8 and 9) contained two complete bifaces; the four ranged between 227 and 301 mm in length (Macko et al. 2005:Table 1). One of the caches also contained a plummet-like charmstone and a Newport perforated stone (Macko 1998:44, Figure 14; also see Koerper 2006:92, Figure 5).

One of the bifaces (Figure 9a) from CA-ORA-64 was made from obsidian sourced to Buck Mountain in northwestern California (see Figure 1). Relatively large hydration readings of 10.0 μ , 11.6 μ , and 12.1 μ (Macko et al. 2005:98) suggest that the caches date to at least the Middle Holocene (of note is the fact that the oldest stemmed point of Buck Mountain obsidian had a rim of only 8.6 μ [Hildebrandt and King 2002: Table 3]). Two of the other bifaces are of an unsourced "glassy rhyolite" exotic to Orange County and visually similar to materials found in southeastern Oregon and Idaho (Macko et al. 2005:96, 100). The fourth biface was made of Monterey chert from the coastal region of central and southern California. It is clear that at least three of these bifaces were not manufactured at the site as no debitage of their materials was recovered (Macko et al. 2005:96), and there is no comparable material with regard to technology or craftsmanship from other sites in the region that would suggest local manufacture. Thus, it is likely that three of the bifaces were produced in the northwestern Great Basin and were brought to Orange County in finished form. The rarity of Buck Mountain obsidian in the lower Sacramento Valley and its virtual absence south of San Francisco Bay (Hughes 1996, cited in Macko et al. 2005:98) strongly suggest

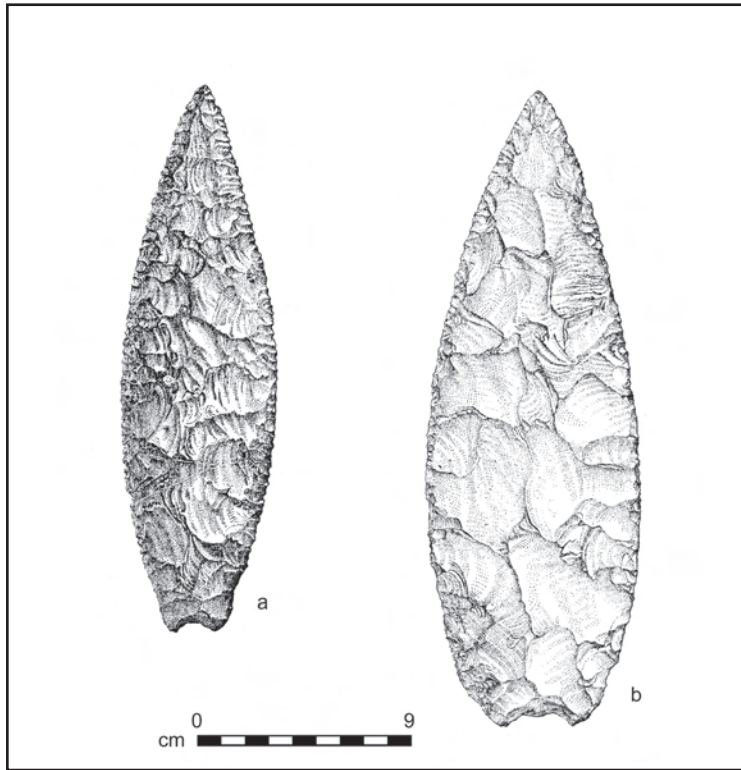


Figure 8. Feature 400 bifaces from CA-ORA-64, Newport Bay area: (a) specimen of Monterey chert; (b) specimen of glassy rhyolite (Reprinted from Koerper [2006:Figure 15c, d], courtesy of Coyote Press).

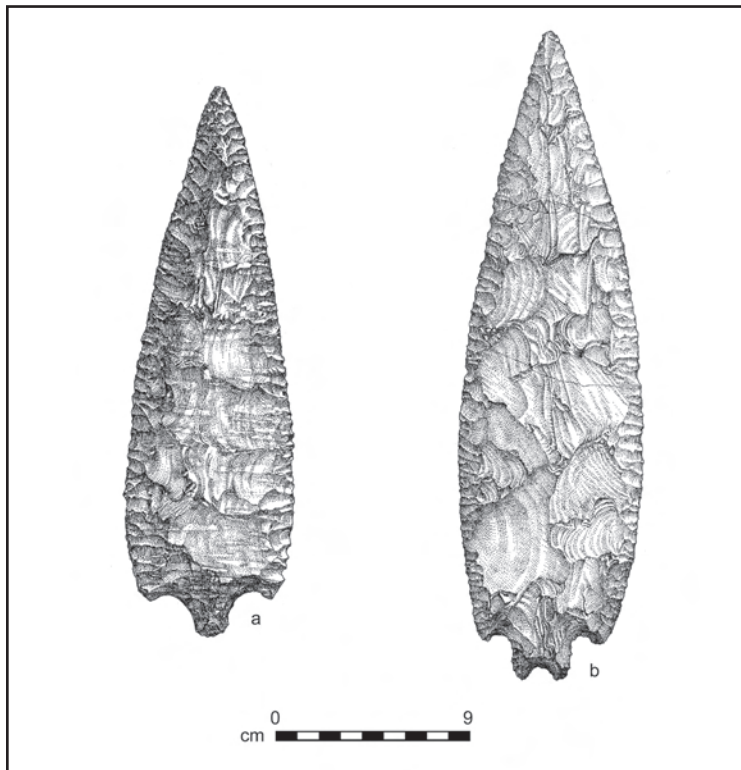


Figure 9. Feature 578 bifaces from CA-ORA-64: (a) specimen of Buck Mountain obsidian; (b) specimen of glassy rhyolite (Reprinted from Koerper [2006:Figure 16], courtesy of Coyote Press).

that the pieces were intended for a specific destination and were not the result of down-the-line trade. As such, we believe it is logical to propose that these bifaces may have been part of the Western Nexus but recognize that the sample size could not be smaller.

In Orange County, there are few other large, relatively well-finished bifaces that resemble (or somewhat resemble) spear points (e.g., Winterbourne 1967:44, 133; Herring 1968:9, 20; Koerper 2006:107, Figure 17a, 115, Figure 18; Cleland et al. 2007:182, 188, Figure 13-12, 189, Figure 13-13). Those of obsidian may well have functioned as knives. The available evidence does not permit these bifaces to be attributed to the Middle Holocene.

Large ceremonial bifaces of uncertain age are documented for south-central Oregon. For instance, Oetting (1992:116, Figure 4) illustrated five bifacial blades collected from archaeological contexts at Malheur Lake that ranged in length from about 360 mm to about 218 mm. None was found with burials (Oetting 1992:115). It is interesting to note that oversized bifaces do not seem to have been a cultural element of the Northern Paiute (e.g., Stewart 1941; Fowler and Liljebblad 1986), who entered the northern Great Basin less than one millennium ago (e.g., Cressman 1986:126; Fowler and Liljebblad 1986:118; also see Madsen and Rhode 1994).

Oetting (1992:115) referred to ethnographic analogues of these large bifaces, such as those from northwestern California (e.g., Rust 1893, 1905; Kroeber 1905, 1925:26-27, Plates 2, 3; Moorehead 1910:I, 97; Loud 1918:420-421, Plate 13). These remarkable artifacts, some larger than 300 mm, were employed in ceremonial dances (e.g., Goddard 1903:83, Plate 3; Rust 1905; Kroeber 1905, 1925:26-27; Kroeber and Gifford 1949:31, 38; Sutton and Sutton 1969:290; Elsasser 1978:198), were exhibited in wealth displays (Goldschmidt and Driver 1940:Table 2, 119; Voegelin 1942:91), and were offered as mortuary

goods (e.g., Loud 1918:357-358; Cressman 1933:14). Interestingly, at the Gold Hill site in Oregon, Cressman (1933:14) observed that large bifaces were found with burials, always “in pairs, usually a red and a black [obsidian] together.” At least three of the large obsidian bifaces from the Gold Hill site were sourced to Buck Mountain (Hughes 1990). Nonburial archaeological finds include those on the Columbia River (Strong 1960) and at the western edge of the Great Basin (Sampson 1985:357-360).

The ethnographic uses noted above have not been reported for the Modoc, Klamath, Shasta, or Achumawi peoples occupying areas west and southwest of south-central Oregon which is in the hydrographic Great Basin (Voegelin 1942:91, see also Spier 1930:42-43). Shasta groups located west of the Rogue and Klamath rivers and the western Achumawi did manufacture the kind of large obsidian blades used in wealth displays (among other purposes), yet they did not themselves employ such artifacts (Voegelin 1942:91). Such blades were likely objects exchanged with northwestern California peoples.

We believe that spatial and temporal discontinuities cast doubt on any hypothesis of homologous connections between the large obsidian blades from northwestern California and the large bifaces from south-central Oregon. Long-distance south-central Oregon Middle Holocene connections involving large bifaces receive cautious support from the finds at Newport Bay, California. Perhaps there are connections of some sort with certain bifaces of the Middle Holocene Western Idaho Archaic Burial Complex (WIABC) (see Pavesic 1985, 1992). One consideration is that perhaps the more direct connections to southern California might have been through the WIABC.

Lozenge Stones

There appears to be a clear affiliation of OGR beads, stone spheres, and large bifaces within the artifact

constellation of the Western Nexus. We believe a fourth artifact class, the lozenge stone (Figures 10 and 11), qualifies as a signature object of the Nexus, since it has occurred in Middle Holocene contexts that also contained some of the other noted artifact types.

The first scholar to set this kind of artifact apart from other objects having plummet-like morphology was Alikea Herring, who surface collected a well polished green diorite specimen from CA-ORA-83,

the “Cogged Stone site,” at the Bolsa Chica wetlands. Herring (1961:Figure 1, far right) described it as 4.5 inches long, 2 inches wide, and 1 inch thick and added that the “shape is that of a lozenge or an elongated diamond. The cross section is lenticular, tapering evenly to the ends, each of which has been slightly blunted” (1961:132). Herring did not give a formal name to the shape but noted (1961:132) that the Bolsa Chica find should “probably” be considered a kind of “charmstone.”

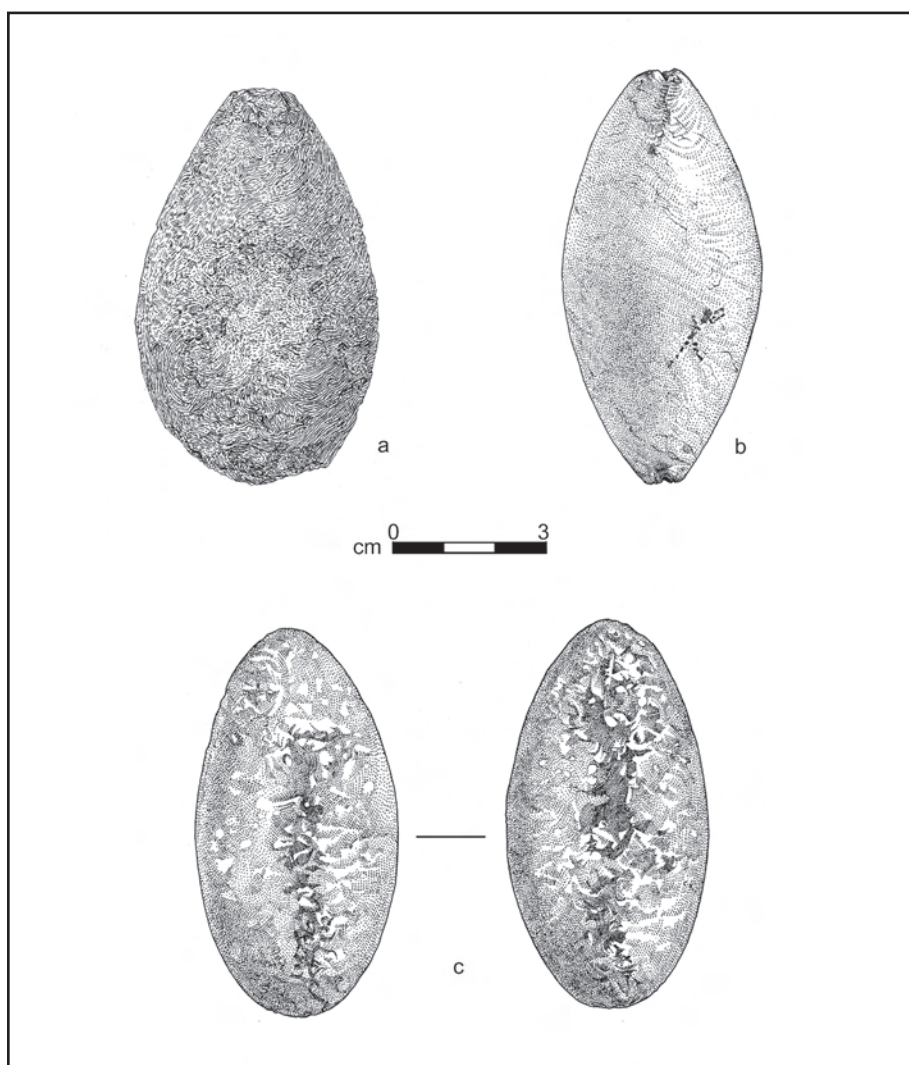


Figure 10. Lozenge stones from Orange County: (a) CA-ORA-378, the Christ College site, schist material; (b) unprovenienced surface find from the Crystal Cove area, milky quartz; (c) CA-ORA-64, Newport Bay area; note the dark mastic/pigment applied down the middle of both faces.

Based on our observations of a limited number of Orange County specimens, we emphasize that the faces are almost always convex and that the edges as viewed in cross section are broadly curvilinear to somewhat angled. We also note that those from Orange County were fashioned from a wide range of generally hard materials.

The lozenges are fundamentally different from most “plummet-like” charmstones found in southern Califor-

nia, which nearly always possess a circular cross section. Most such local charmstones are roughly spindle to cigar shaped, are manufactured of various materials, some of which are relatively soft, and may or may not be perforated at one end. Some such artifacts compare more or less with certain styles among Ragir’s (1972: Figures 16 to 18) A, B, and C types (also refer to Gifford and Schenck [1926:Plate 22, especially the upper row, and Plate 23] and Elsasser and Rhode [1996:93-95] Type S). Fewer in southern California are of “oval”

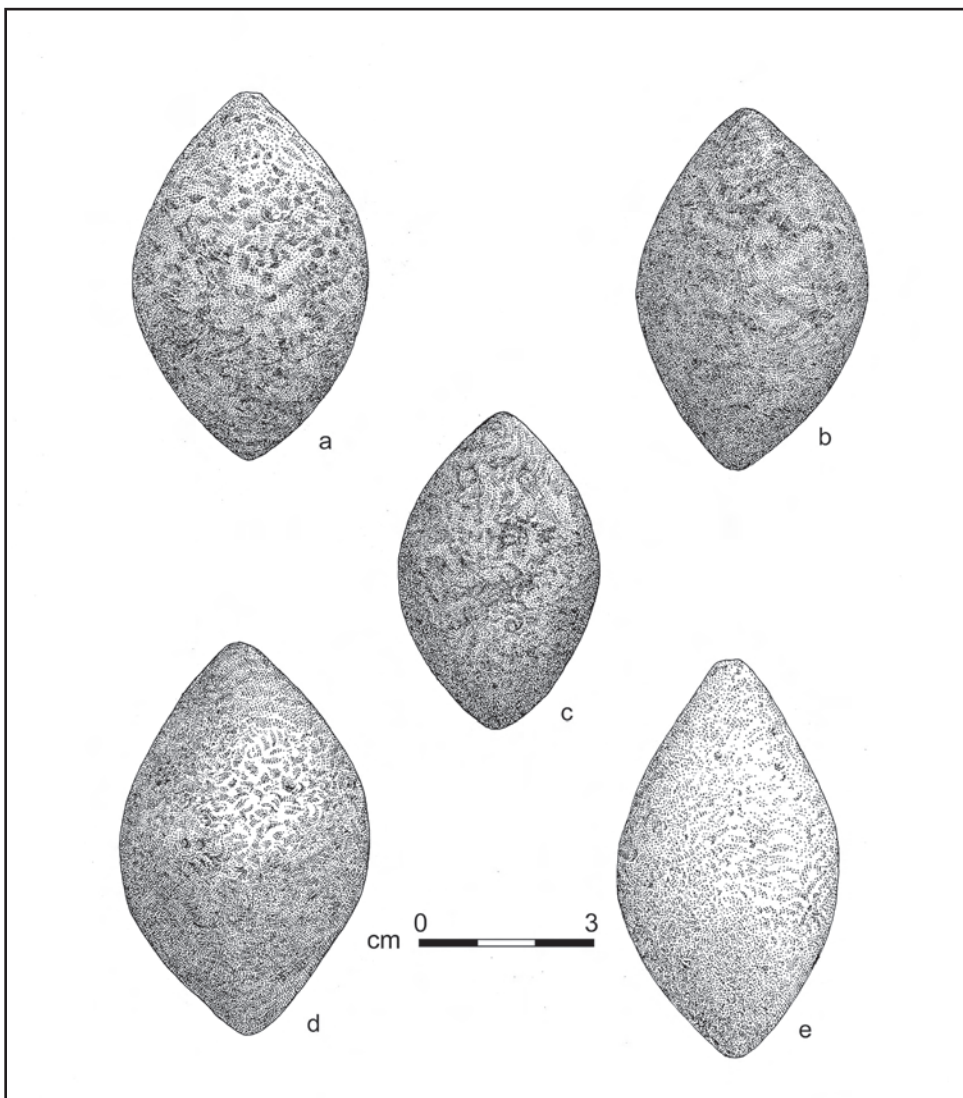


Figure 11. Five lozenge stones from a private collection (see Table 2), all probably from the southeastern Oregon-northeastern California area.

design (cf., Elsasser and Rhode 1996:65-67 [Type O]; also see Gifford and Schenck 1926:Plate 22, I, J).

There are some differences between lozenge stones found at the southern end of the Western Nexus (Figure 10) and the vast majority of those documented well to the north, mainly from the Klamath Lake region and south-central Oregon (Figure 11). Those from coastal southern California are larger; the normal range of lengths, we estimate, falls between about 75 and 100 mm, and, tentatively, they exhibit length/width ratios ranging from about 1.6 to 3.3. In plan view, the ends are comparatively rounded. In some cases, faces have linear designs down the middle drawn with a mastic/pigment that is likely asphaltum.

One lozenge stone was recovered from the Encino site (CA-LAN-111; Rozaire 1960:317-318, Table 1, Plate 5n) in the San Fernando Valley just to the east of the Santa Monica Mountains. This site, dating sometime between 8,000 and 5,000 BP, contained a typical Topanga I assemblage. The specimen measured 90 by 40 mm (length/width ratio of 2.25). Rozaire believed it was crafted from meteoric iron, but we suspect the material is actually magnetite.

A glaucophane schist specimen (Figure 10a) came from the Christ College site (CA-ORA-378) in Irvine (Koerper 1995:6-230-231, Figure 91). Its length/width ratio was 1.6, with a length of 77.7 mm, a width of 47.4 mm, and a thickness of 31.4 mm. The specimen was not recovered from a dated context, but the site dated mostly to the Middle Holocene (Koerper 1995).

Several lozenge stones are known from CA-ORA-83, in addition to Herring's (1961) discovery. One of us (HCK) has observed similarly shaped artifacts in a private collection whose owner had found them at CA-ORA-83. The great majority of the CA-ORA-83 radiocarbon dates fall to the Early and Middle Holocene (Nancy Desautels-Wiley, personal communication 2009).

A lozenge stone of white (milky) quartz (Figure 10b) was surface collected by a geologist in the Crystal Cove area, Orange County. Its length was 82 mm, with a width of 39 mm (length/width ratio is 2.1). Another lozenge-shaped artifact (Figure 10c) discovered at CA-ORA-64 measures 93 mm long, 53 mm wide (length/width ratio is 1.8). A stain of dark mastic/pigment was present along the middle of both faces of this specimen.

Those lozenge stones found in the greater Klamath Falls region and parts of the northwestern Great Basin (Figure 11) have edges that are almost never as rounded as those specimens reported from Orange County. Rather, they terminate more sharply. In plan view, the ends appear more pointed. They are of smaller mass. The normal range of their length/width ratio we estimate at about 1.5 to 2.1. Thus, there are ratio overlaps evident when the northern varieties and southern varieties are compared. Two other examples from the Gienger and Johnson collections in southeastern Oregon are illustrated in Strong (1969:228, Figure 96). Their length/width ratios are about 2.1 and 2.0.

Two lozenge specimens from Lovelock Cave in western Nevada are pictured in Loud and Harrington (1929:113, Plate 57c, d). They were found in general association with OGR beads and stone spheres. Each is about 55 mm long. We estimate the length/width ratios to be 1.7 and 2.0. A similar artifact was discovered at the nearby Falcon Hill site (Hattori 1982:52-54), but there was no indication of the design of that object in cross section.

One of us (HCK) was allowed to view a large, unproven collection of such lozenge stones owned by a relic collector in northern California. Most are presumed to be from the southeastern Oregon-northeastern California area. Five were selected as representative specimens (Figure 11, Table 2). Length/width ratios of these five range between 1.5 and 1.8. All appear to be of basalt, and in contrast with the southern California

lozenges, there seems to be little material variability for these northern variants of the lozenge. Their earliest manufacture seems to have occurred in the middle of the Middle Holocene (Sampson 1985:235, 511, 514). Based on comparative morphology and our present understanding of time depth for lozenge stones, we hypothesize homologous connections between what we propose are two sub-types, the Northern Lozenge stone and the Southern Lozenge stone.

Within the private collection just noted above, there was one Klamath region artifact (Figure 12), whose shape resembled the coastal southern California lozenge stones more than it did the lozenges found to the north, especially given its rounded edges and pointed ends (in plan view). It is quite large (250 mm long, 80 mm wide, and 46 mm thick). The length/width ratio is 3.1.

Hector et al. (2007) explored the subject of three “types” of northern California bipointed “charm-stones” that in plan view are lozenge-shaped. The proposed taxa (Hector et al. 2007) are “Football,” “Lemon,” and “Diamond.” Clearly, the diamond-shaped charmstone type belongs in the category of objects shown in our Figure 11, what we term the Northern Lozenge sub-type.

Hector et al. (2007:39, Figure 11) pictured a lemon-shaped specimen that, in plan view, has virtually the same morphology as their “Diamond,” the major difference being that it is significantly larger (Hector

et al. 2007:Figure 8). There is no statement, however, of whether the cross section is lenticular rather than circular. The “Football” is even larger, but with more rounded ends, and its cross section is said to vary from “round to flattened oval.” Also, the length-width ratio ranges from 1.97 to 2.49. Hector and her colleagues seem to be hinting at historical connections between their three categories, a reasonable suggestion.

The function of these lozenge-shaped artifacts is unknown. It has been suggested that some were used as atlatl weights (e.g., Loud and Harrington 1929:113), and they seem too large for sling stones. Dorsey (1901:22) shared some thoughts regarding what he identified as “lozenge-shaped stones” from the Klamath Falls region. Klamath Falls, Oregon, is just west of the northwestern Great Basin, in the most southerly extension of the historic Plateau culture area. He had purchased a 2.25 inch long, 1.5 inch wide, and 1 inch thick lozenge stone (length/width ratio 1.5). The seller told Dorsey that a number of Klamath Indians had seen the artifact and had offered that it was used in playing the hand game. Dorsey (1901:22) stated he could not verify this interpretation but believed it as likely true since he could not imagine any other use for the object.

We believe it more likely that lozenge stones served ritual purposes. It has been suggested (Koerper et al. 2006:125; Koerper 2007:94) that the lozenge shape was intended to convey pudendum (vulvar) imagery.

Specimen No.	Minimum Length (mm)	Maximum Width (mm)	Maximum Thickness (mm)	Weight (g)	Figure
a	62.9	41.5	26.9	86	11a
b	62.7	40.7	19.9	65	11b
c	55.1	35.5	21.1	49	11c
d	67.6	37.2	23.5	59	11d
e	68.3	42.6	25.9	81	11e

Table 2. Attributes and metrics of lozenge stones from a private collection. All of these specimens are probably from the southeastern Oregon-northeastern California area.

Discussion

The four artifact types that are currently suggested to comprise material manifestations of the Western Nexus co-occur in both space and time in two widely separated areas – coastal southern California and southeastern Oregon, with a single intermediate locality (Lovelock Cave) in western Nevada. While most of the artifacts of the Western Nexus have a wider geographic distribution than just the two major centers, such locations mostly lie between the centers and could be interpreted as being on trade routes. Clearly, there was some movement of tangible materials between the two areas, and it seems likely that other items may have been involved, including perishable materials not yet identified. Certainly, there would have been movement of ideas along with the com-

modities, suggesting the possibility that some ceremonial connections also existed. At this point, it seems reasonable to suggest that OGR beads originated in southern California and were traded north and that at least some obsidian objects originated in the northwestern Great Basin (Buck Mountain) and were traded south. The initial origins of the spheres and lozenges are unknown.

The idea of ceremonial connections is supported by the recovery of some of these artifacts in caches that were clearly ritual in nature, the presence of others in mortuary contexts, and the absence of use wear patterns on any of the artifacts that would indicate that they had been used for mundane purposes. No OGR beads have been found in obvious ritual contexts.

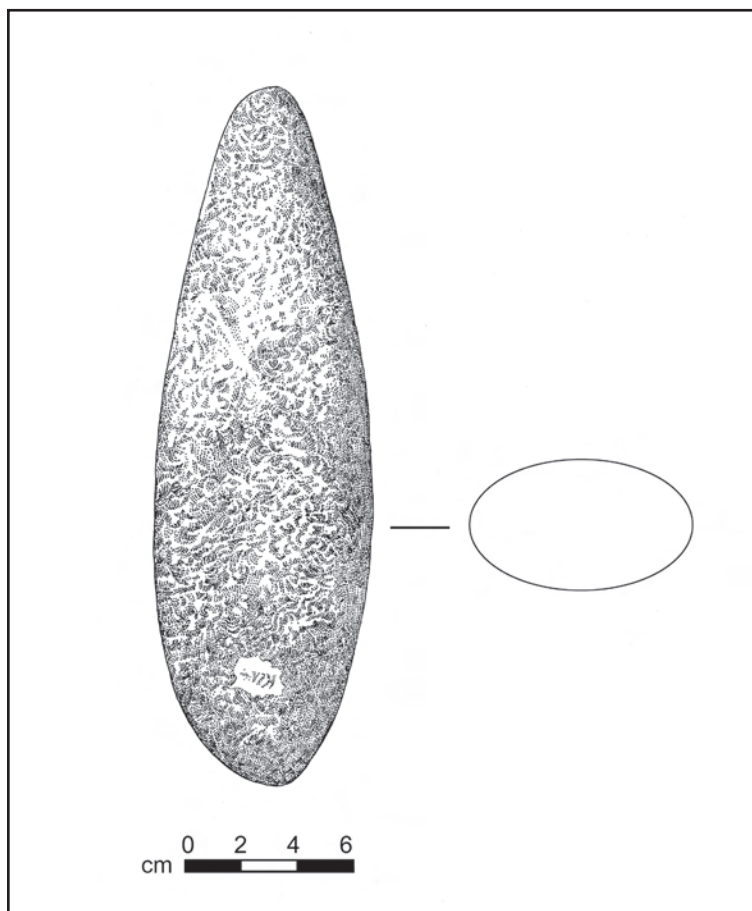


Figure 12. Lozenge stone from the Klamath region (private collection).

Uto-Aztecan Linguistic Inferences

Howard and Raab (1993:7) argued that the distribution of OGR beads in the southern Channel Islands/Orange County region suggested a Middle Holocene “sphere of socioeconomic interaction” separate from a similarly aged interaction sphere in the northern Channel Islands. They contended “that the southern Channel Islands and adjacent coast were culturally distinct from the Santa Barbara Channel [Chumash] region at least as early as 5000 calendar years B.P.” and suggested the possibility that OGR beads marked “the presence of Takic peoples in southern California around 5000 years ago” (Howard and Raab 1993:7-8; also see Raab and Howard 2002:594-596; Kennett et al. 2007). Noting the paucity of OGR beads in the Santa Barbara area, Jenkins and Erlandson (1996:301) supported the idea of a cultural frontier.

King (1981:326-327; 1990:111) had first noted the distribution of OGR beads within territory occupied by Uto-Aztecan groups during historic times. This observation prompted Howard and Raab (1993:8) to propose the linguistic connection, although they readily acknowledged that their data were too limited to support any definitive conclusion and noted the possibility that a pre-Takic population may have been responsible for the OGR beads. Vellanoweth (1995:18) also believed that there were too few data to form a conclusion about the direction of interactions or of linguistic connections. Raab and Howard (2002:595-596) continued to support the proposed linguistic hypothesis and suggested several avenues of future research linking language affiliations and material culture, including basketry and other unspecified cultural traits.

Taking the idea further, Jenkins and Erlandson (1996:301) suggested that the cultural frontier between the Santa Barbara and Los Angeles areas suggested by Howard and Raab (1993) represented the boundary “between proto-Tongva [Takic] and proto-Chumash peoples as early as 5,000 years ago”

(Jenkins and Erlandson 1996:301). The idea of a Tongva/Chumash boundary at 5,000 BP was also supported by Vellanoweth (2001:947). Citing genetic and archaeological data, Kennett et al. (2007:531, 532-533) argued that Uto-Aztecan people migrated to the southern California coast and the southern Channel Islands sometime “between about 5500 and 4500 cal yr BP.”

The distribution of OGR beads within the area historically occupied by Northern Uto-Aztecan (NUA) groups forms the foundation of this linguistic hypothesis and is based on the premise that NUA groups were in place in those areas by at least 5,000 BP. This is (and was) an unreasonable premise, however, as it is clear that the geographic distribution of NUA groups was much more constricted, and NUA groups were not present in either southern California or the northwestern Great Basin during the Middle Holocene.

Northern Uto-Aztecan is part of the larger Uto-Aztecan language family. It is generally accepted (Lamb 1958; also refer to Sutton 1987; Campbell 1997:133; Golla 2007) that sometime prior to about 5,000 years ago, Uto-Aztecan was located in northern Mexico and had begun to split into its northern (NUA) and southern (Southern Uto-Aztecan) divisions. NUA is believed to have moved into the general area of the southern Sierra Nevada/western Mojave Desert (Fowler 1972, 1983) by about 5,000 BP (Figure 13). The NUA family subsequently diverged into its major branches (including Takic and Numic) sometime between 4,500 and 3,000 BP (Hinton 1991:135). By about 3,500 BP, Takic had diverged and expanded into southern California (see Sutton 2009), and Numic remained in place until its expansion to the north and east after about 1,000 BP (see Sutton 1987, 1994). Hill (2001:928-929) thought these dates were too early and suggested that proto-NUA did not enter California until after ca. 4,500 BP and did not break up until closer to 3,000 BP. Golla (2007:75)

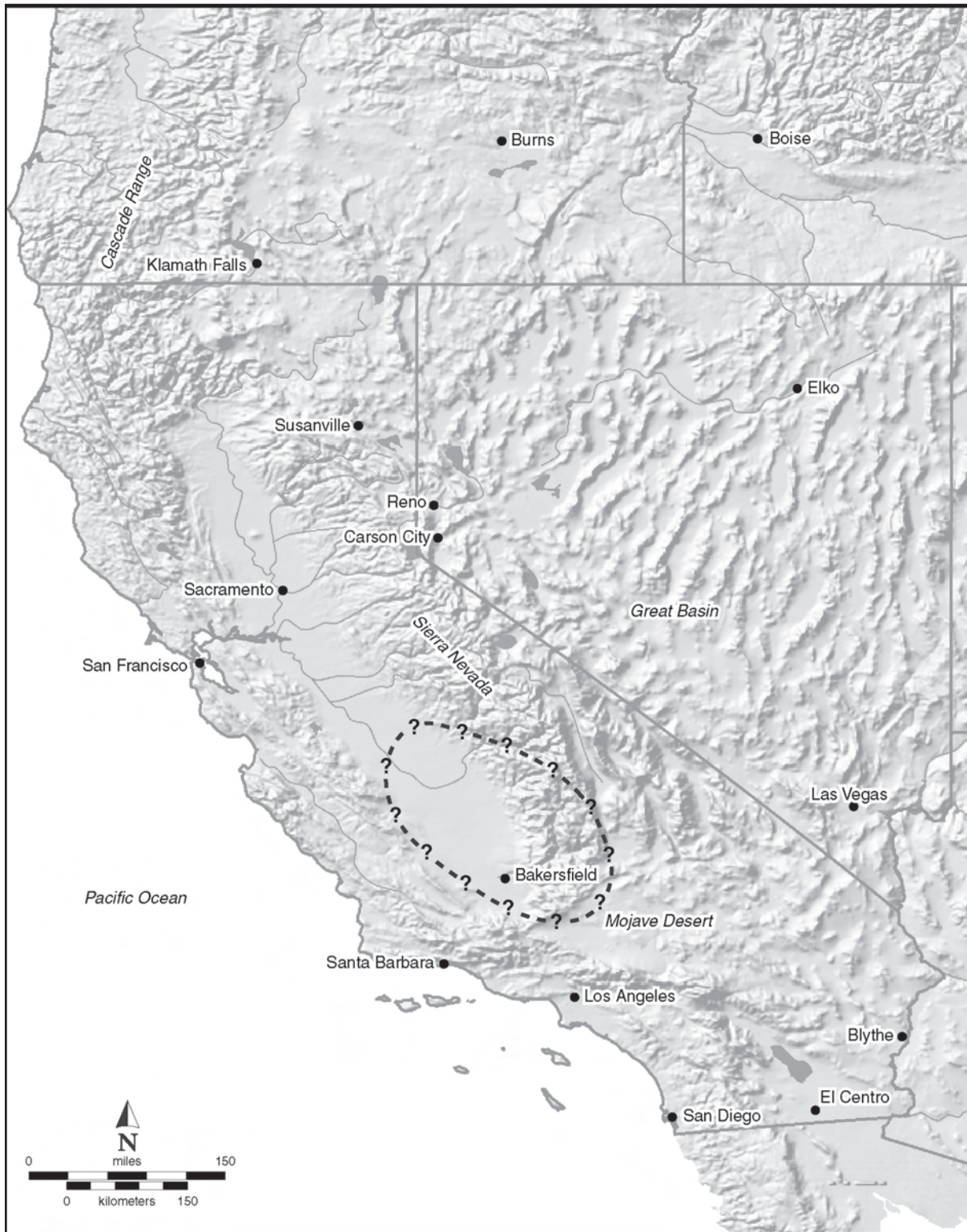


Figure 13. An estimation (dashed line) of the distribution of Northern Uto-Aztecan in California about 5,000 BP.

suggested that Takic diverged about 2,000 BP, and moved south to occupy most of southern California “in a series of relatively late expansions from the northeast” (Golla 2007:74). All of this makes it clear that 5,000 BP is far too early for NUA to have been in either coastal southern California or the northwestern Great Basin.

Sutton (2009) compiled the linguistic, anthropometric, aDNA, and archaeological data relating to the Takic expansion and argued that a Takic population (e.g., proto-Tongva) migrated into southern California from the western Mojave Desert/southern Sierra Nevada/southern San Joaquin Valley sometime about 3,500 BP (and not as early as 5,000 BP as suggested by Kennett et al. [2007]), occupied the Los Angeles Basin and southern Channel Islands, and probably replaced existing Hokan groups. Sutton (2009) further proposed a second phase of Takic expansion through language diffusion, one that moved south and east sometime after about 1,500 BP. If this model is correct, then Takic groups cannot be connected to the Western Nexus since they did not arrive in coastal southern California until after 3,500 BP.

As for NUA populations in the northwestern Great Basin during the Middle Holocene, Numic (the historic languages in that area) did not diverge and expand until after about 1,000 years ago, arriving in the northwestern Great Basin about 700 BP (see Sutton 1987, 1994; Kaestle and Smith 2001). Therefore, Numic did not arrive in the northwestern Great Basin until some 4,500 years *after* the establishment of the Western Nexus. It seems more likely that Penutians occupied that region during the Middle Holocene (Moratto 1984:550). Further, it seems doubtful that OGRs are even a proto Uto-Aztecan marker as NUA (which includes Takic and Numic) diverged in the western Mojave Desert/southern Sierra Nevada only about 5,000 years ago and was not present in either southern California or the northern Great Basin before that time.

We agree that the distribution of OGR beads in southern California during the Middle Holocene delineates a cultural boundary (generally following Jenkins and Erlandson 1996) between the Chumash and their neighbors to the south along the southern California coast. The dating of this boundary is too early for the Takic to have been involved, however, and it appears much more likely that the boundary was between Chumashan (formerly considered a Hokan group but now classified as a separate linguistic family [Klar 2002; Golla 2007]) and the Hokan groups that probably occupied the southern California coast at that time. It seems likely that this Chumashan/Hokan boundary persisted until the arrival of Takic groups ca. 3,500 BP (e.g., Sutton 2009), at which time it became a Chumashan/Takic border.

Interaction

We propose herein that a number of artifact types are associated with the Western Nexus. There is no doubt that OGR beads were an important trade item in the Nexus, but the significance of obsidian and glassy rhyolite bifaces, stone spheres, and lozenge stones is less certain. While it seems clear that the Western Nexus represents an interaction sphere, the sociopolitical nature of this sphere is uncertain. While some of the movement of materials (e.g., OGR beads) might represent simple trade following a down-the-line exchange model (Vellanoweth 2001:946), at least some of the materials (e.g., large bifaces) undoubtedly reflect a different exchange model. Lozenge stones may not actually have been traded, but the basic plan for their morphology (and perhaps meaning) may have been exchanged.

The bifaces from CA-ORA-64 were of an age that is similar to those associated with the WIABC (Pavesic 1985, 1992) on the southern Plateau, but their basal configurations differ (Macko et al. 2005:100). The WIABC was dated between about 4,500 and 4,000 BP (possibly as late as 3,500 BP) and was defined

by caches of mortuary items, such as blades, preforms, and “turkey-tail” bifaces, and also including shell beads and ochre (Pavesic 1985:81-81). Pavesic (1985:82) thought that this complex might have been the manifestation of a regional trade network, moving obsidian to the west and importing goods from the Pacific Coast. The demonstrated connection (OGRs and obsidian) between southern California and the northwestern Great Basin leaves open the possibility that the WIABC may have been related to the Western Nexus (Macko et al. 2005:100). As there are many more large blades associated with the WIABC than there are with the Western Nexus in southern California, the “blade concept” may have originated in the north.

We propose that the movement of Western Nexus materials and ideas was accomplished by small groups of travelers moving between the two major centers (coastal southern California and the northwestern Great Basin). Perhaps people from both regions participated, with southern California individuals transporting OGR beads and other materials northward and northwestern Great Basin individuals traveling south with materials that included small numbers of large bifaces and additional items, such as spheres and perhaps lozenge stones.

It appears that at least two routes were utilized, the San Joaquin Valley and the far western Great Basin. Given the presence of OGR beads in Lovelock Cave and their general rarity in the San Joaquin Valley, the trade route north may have been in the western Great Basin. The presence of stone spheres in the San Joaquin Valley suggests the possibility that the valley provided a southward route.

Given that NUA groups were not involved, the Western Nexus model implies interaction between Hokan and Penutian peoples at a time when it is thought that Penutian groups were moving into northern California from the north and east at the expense of Hokan

groups. This linguistic reconstruction (see Moratto 1984:555; Golla 2007:75-80) suggests that sometime around 5,000 BP Penutian groups moved south from Oregon to occupy the northern Sacramento Valley, displacing and/or absorbing Hokan groups. Penutians then moved further south to the northern San Joaquin Valley by about 3,500 BP, impacting other Hokan (or perhaps even NUA) groups (Moratto 1984:560; Kennett et al. 2007). Although this issue is far from clear, we note with interest the probable contact between Hokan and Penutian groups during the Middle Holocene and cannot help but wonder what impact the Western Nexus had on sociopolitical and economic relations and population movements.

Conclusions

The existence of an interaction sphere linking coastal southern California and the northwestern Great Basin some 5,000 years ago is supported by the data. This interaction sphere, herein named the Middle Holocene Western Nexus, involved long-distance exchange of materials and ideas relating to ritual/belief systems. Some of the Western Nexus artifacts have been found in caches, many in pairs or triads (such as some of the stone spheres and bifaces), and some have been found in mortuary contexts, all of which suggests that at least some ritual thoughts and behaviors were shared across 1,200 km. It seems likely that the Western Nexus was but one of the exchange systems operating in California during the Archaic (e.g., Chertkoff 1989).

It seems very clear that the Western Nexus did not involve interactions between far-flung groups of NUA peoples. The evidence that NUA groups did not occupy either of the Western Nexus centers during the Middle Holocene is compelling. Rather, we suggest that the Western Nexus involved interactions between Penutian and Hokan groups during a time of Penutian population movements that often occurred at the expense of Hokan groups. The implications of such interactions are uncertain.

The original concept of a Middle Holocene interaction sphere connecting southern California and the northwestern Great Basin (Howard and Raab 1993) remains valid. We have expanded on the artifact inventory to include lozenge stones, given the interaction phenomenon a name, refined its linguistic implications, and provided some thoughts on its meaning and function. As additional data accumulate, it may be discovered that the Western Nexus extended further north and south along the southern California coast than is now believed. We look forward to continued research and discourse on this subject.

Acknowledgments

This paper originated as a part of the ongoing investigations by Statistical Research, Inc., in the Playa Vista area. We appreciate the comments and suggestions of Richard Ciolek-Torrello, Jill K. Gardner, Donn R. Grenda, and anonymous reviewers. Luke Wisner of Statistical Research, Inc., produced Figures 1, 2, 3, 7, and 13, and Joe Cramer produced Figures 4 and 8 through 12. We thank Gary Breschini and Coyote Press for permission to recycle renderings of Figures 4, 8, and 9. We also appreciate the assistance of Dennis L. Jenkins of the University of Oregon and Catherine Toepel of Heritage Research Associates, Eugene, Oregon.

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