

NETTED STRUCTURES IN THE PREHISTORIC GREAT BASIN

Ruth Burgett Jolie¹

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¹Department of Anthropology, University of New Mexico (rbjolie@unm.edu)

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Within the prehistoric Great Basin, netted fabrics are well represented in perishable artifact assemblages and typically occur in the form of hunting and fishing nets. Other netted structures existed, however, including bags, hair nets, and sling pockets, among other forms. In this paper I review the chronology and primary technology of knotted and so-called “knotless” nets and consider their importance to peoples across the Great Basin. I then briefly examine what is known ethnographically about Great Basin netted structures and their use contexts in relation to the interpretation of archaeological specimens.

I would like to first consider what is meant by the term “netting.” Following Emery (1995:30), netting is an open fabric that is created by repeatedly interworking a single element on itself. Netting may be classified structurally on the basis of how the interworking element connects to a previous row. This can be accomplished in two different ways using a variety of tools, like net gauges, shuttles, bobbins, or with the maker’s hands. During manufacture the free end and the full length of the element may be drawn through the appropriate opening. Alternatively, a *loop* of that element may be drawn through. The active use of the free end is exemplified by various forms of *linking* and *looping*, whereas drawing a loop through a loop is commonly described as *interlooping* (e.g., knitting, crocheting). There has been some confusion in the anthropological literature between knotted and knotless varieties of netting and the distinction is very important. Knotless netting is typically, but not always, taken to mean linked or looped fabrics, sometimes with a twist added to each successive link or loop. When a knot is added to secure an element that is looped to the preceding row, it is referred to as knotted looping or knotted netting (Emery 1995:34). Knots commonly used in netting include simple overhands, half-hitch varieties, square and granny knots, and the structurally related sheetbend, weaver’s, and fishnet knots (see Emery

[1995:34–39] for more detail on types of knots). In describing knotted netting, it is important to note the type and sequence of knots employed in the structure of the net. I prefer the terms linking or looping when analyzing and describing so-called “knotless” netting because the term “knotless netting” is too vague and indicates nothing about an object’s structure. By virtue of their construction, all single-element fabrics may be slightly elastic (Emery 1995:30).

NETTED STRUCTURES IN THE ARCHAEOLOGICAL RECORD

Turning to netted structures in the archaeological record, one finds that analyses are, at present, limited by several factors. A primary problem with archaeological netting, as with many perishables, is that they are often imperfectly preserved, even in contexts where preservation is favorable. In the absence of diagnostic features like centers, edges, or a complete mesh, it is often very difficult, if not impossible, to suggest a specimen’s original form or function. Complicating matters further is the fact that many early excavations at sites yielding substantive perishable assemblages lacked good chronological controls or, as in several reported instances, did not bother to save any (or only a small sample) of the cordage and netting encountered (e.g. Cressman 1942). Still another problem results from instances where knotted cordage or net fragments were saved, but not tabulated or described in the published reports (e.g. Jennings 1957). As two archaeologists commented in their report on one rich Great Basin archaeological site (Heizer and Krieger 1956:62),

No attempt is made in this paper to analyze the several hundred specimens which may be variously termed ropes, braids, cords, and so on, both plain and knotted.... It appears to us that a careful study and depth tabulation of these objects (aside from knots) is a waste of time unless their functional association can be determined.

Despite these limits to the data, however, we still have enough evidence to allow us to

sketch, if only preliminarily, the spatial and temporal distribution of prehistoric netted fabrics. The earliest netting known from the Great Basin derives from Danger Cave, Utah, in the eastern Great Basin. It is a net corner fragment constructed using lark's head knots that dates between approximately 11700 and 10900 B.P. (Andrews et al. 1986:168; Jennings 1957:93). Thereafter, netting occurs throughout later levels at the site, using square, sheetbend and weaver's knot types, although these are not tabulated. One finely made complete net dating to approximately 7000 B.P., is described by Jennings (1957:Figure 207) as a rectangular net bag (complete with drawstring), but by Andrews et al. (1986:168) as a casting net. Another specimen from the same level, though with a smaller mesh, suggests a drawstring bag (Jennings 1957:Figure 216).

At Hogup Cave, Utah, netting fragments were recovered from the majority of the site's sequence, with the earliest dating to 8800±200 B.P. by way of an associated date (Aikens 1970:28). Although knot types are not reported for any of these specimens, Aikens (1970:125) does comment on their typically fine gauge. Notably, Hogup Cave also produced a large complete net for small game, but it was recovered by non-professionals and remains undated. Netting fragments constructed primarily with sheetbend knots were recovered from Cowboy Cave on the western edge of the Colorado Plateau and occur sporadically throughout levels that post-date roughly 7300 B.P. (Hewitt 1980). Fragments of knotted netting that are much younger, dating between roughly 1500 and 800 B.P., have been recovered from several other sites throughout southern Nevada and Utah, but their precise configurations are poorly reported (Dalley 1976; Steward 1937; Wheeler 1973). The single piece of Fremont-age knotless netting from Promontory Cave No. 1 on the northern edge of the Great Salt Lake appears to be, based on Steward's illustration, a simple looped structure that may have been part of a hairnet (Steward

1937:35, Figure 13) or bag (Andrews et al 1986:169). A more peculiar artifact from the same site, likely of comparable age, consists of a stick bent into a six inch hoop. The hoop frame was then irregularly interlaced or linked with sinew strips (Steward 1937:24). Its association with feathered twig “darts” suggests that it may have been used in the hoop-and-dart game that was played widely throughout Native North America in historic times (Culin 1907).

Collectively, documented nets and net fragments from eastern Great Basin caves suggests that, in terms of both cordage gauge and mesh size, they were used primarily to trap a variety of small game animals (Andrews et al. 1986), although the frequency of nets that may have been used for fishing remains unclear. Further afield, though still of interest, is that Frision et al. (1986) report a unique large, rectangular animal trapping net from a rockshelter in north-central Wyoming. This net, directly dated to 8860 B.P., was designed for capturing animals the size of deer or mountain sheep. No other specimens like this one have been reported archaeologically from the Great Basin.

Though data are wholly lacking from the central portion of the Great Basin, netting is abundant in western Great Basin closed sites. Unfortunately, dating and contextual information for these specimens are the poorest and many collections have never been studied (e.g. Falcon Hill and Eastern Shore sites at Winnemucca Lake). One net made with square knots from Fishbone Cave on the northeastern shore of Winnemucca Lake has yielded a conventional date of 7830 ± 350 B.P. (Orr 1956, 1974). Later assemblages from the Humboldt, Winnemucca, and Pyramid Lake basins, many likely dating between roughly 4000 and 1000 B.P., are ascribable to the Lovelock archaeological culture (Burgett et al. 2002; Fenenga and Riddell 1949; Goodman 1985; Heizer and Krieger 1956; Jolie 2005; Loud and Harrington 1929; Riddell 1956a, 1956b;

Tuohy 1969). These collections contain vast quantities of netting in a variety of forms. In some cases the constituent two-ply cordage is so fine as to be comparable to modern embroidery thread (Burgett et al. 2002; Fowler and Hattori 2004). Sheetbend and weaver's knots are by far the most common knot types, and the range of mesh sizes present has suggested a variety of uses including capturing fish, small mammals, and birds, especially waterfowl (Loud and Harrington 1929).

A handful of sites in the northern Great Basin have produced small quantities of netting, but most of these assemblages suffer from the same problems I have identified for western Great Basin materials. In Oregon, Cressman (1942:77) and Heizer (1942) identified net fragments and complete nets from Roaring Springs Cave, Catlow Cave No. 1, and Massacre Lake and Tule Lake caves. All were made with sheetbend (predominantly) or weaver's knots, with the notable exception of two pieces from the upper deposits of Roaring Springs Cave that appear, from Cressman's (1942:Figure 37) illustration, to be simple linking (cf. Emery 1995:30). Few comments are offered about possible functions, but Heizer (1942) noted the resemblance of the Massacre Lake and Tule Lake cave specimens to historic rabbit nets. Edward Jolie and I recently examined a net fragment collected by non-professionals from Catlow Cave and arrived at the same conclusion (Jolie and Burgett 2003). To the east, Dirty Shame Rockshelter yielded five pieces made with weaver's knots that were confined to the upper three zones of the site, placing them between roughly 6350 B.P. and 500 B.P. (Andrews et al. 1986:166).

Interestingly, there are number of instances where the available evidence suggests greater diversity in the contexts of net use in the western and northern Great Basin than in the eastern Great Basin. One fragment of netting from a probable human coprolite at Dirty Shame Rockshelter suggests use as a laxative (Andrews et al. 1986:156). Several other sites in the

western and northern Great Basin document knotted nets of unspecified configuration used as burial wrappings (Barnes 2000; Burgett et al. 2002; Heizer 1942; Loud and Harrington 1929; Orr 1956, 1974). This functional diversity is most readily apparent in the variety of forms found in western Great Basin assemblages. Hairnets appear to have come in several structural types, a few even being made from knotted human hair (Burgett et al. 2002; Loud and Harrington 1929). Three sling pockets have been reported, one of which is knotted (Grégoire 1956), while the remaining two (Heizer and Johnson 1952; O'Neale 1947) are accomplished in a so-called wrapped weave that is technically analogous to linking with wrapping stitches (cf. Emery 1995:45). Comments may now also be made on mysterious fragments of carbonized fabric referred to as "crochet work" by Loud and Harrington (1929:82) in their 1929 report on Lovelock Cave. Based on my own reanalyses, these fragments are simple looping, and one specimen appears to be the opening of what was probably a globular bag with a drawstring. These observations are corroborated by several other Lovelock period finds. Fragments of knotless netting from Lovelock Cave, though structurally unspecified, were described by Grosscup (1960) as being parts of a bag, and a potentially analogous specimen from Nicolarsen Cave at the southern end of the Winnemucca Lake basin, described as a small "braided pouch" by Barnes (2000:91), looks to me as though it may actually be very tight simple looping.

Though rare, decoration is present on some of these western Great Basin specimens. Loud and Harrington (1929:90) report multiple complete fish (?) nets and fragments from Lovelock Cave that exhibit red and black pigment-stained cordage, some with clearly patterned mesh sequences. Several hairnets recovered from cave sites around Pyramid Lake in the 1960s exhibit bird down caught within their knots, affecting what must have originally been a subtle and delicate

component of dress (Burgett et al. 2002; Fowler 2002).

One final aspect of prehistoric netting use that must be commented on is the great extent to which well-worn or otherwise “exhausted” nets were recycled. This fact is illustrated most dramatically in western Great Basin Lovelock period sites where fragmentary and nearly complete knotted nets were twisted and sometimes plied together to make a variety of new items. Documented uses include mending elements for basketry, as well as tumplines, rope of various gauges, and articles of clothing, like skirts (Burgett et al. 2002; Goodman 1985; Heizer and Krieger 1956; Jolie 2005; Loud and Harrington 1929; see also possible examples from the Connley caves [Connolly et al. 2004] and Cowboy Cave [Hewitt 1980:67, Figure 31]).

TYING THE PAST TO THE PRESENT

While netted fabrics were clearly employed in subsistence-related activities with great frequency in the past, it should be obvious by now that they were not restricted to food procurement. The archaeological presence of bags, hairnets and other forms executed in knotted, looped, and linked techniques, in addition to hunting and fishing nets, indicates that netted structures were important in a variety of contexts. I now briefly consider what is known about netted structures and their uses in the Great Basin ethnographically, with preference to information that may inform the interpretation of archaeologically recovered netted fabrics.

As with the available archaeological literature, technical information regarding netted structures is regrettably absent from the ethnographic literature. For reasons explored earlier, it is often unclear if what an author calls “netting” refers to a structure that is either knotted, looped, or linked. Further, the ethnographic data provide more evidence of associated tool use (e.g., net gauges, shuttles) in netted fabric production and less evidence of reuse than we have good

evidence for archaeologically (but see Fowler and Hattori 2004). What is most significant for our purposes, however, is that the ethnographic record offers potential insights into the varied social contexts in which different netted fabrics were used. Much attention has been given to the communal aspects of net use in subsistence related activities, particularly rabbit hunting (e.g. Adovasio 2002). Time precludes a review of this topic here, but it is enough to observe that, on a broad scale, subsistence-related nets correlate largely with environment and the quarry sought. In the context of fishing, for example, not all groups had equal access to water resources. Therefore, the distribution of types of fishing nets is dissimilar between tribes. Some groups, like the Pyramid Lake Paiute, were more reliant on fish than other groups. As a result, they had an assortment of knotted fishing nets depending on the type of fish, season and water source (e.g. Fowler 1989; Fowler and Bath 1981; see also Kroeber and Barrett 1960). Fowler (1994) has observed that linear nets are more common in the archaeological record of the western Great Basin, while dip nets and linear net types are prevalent in the area historically. Renewed interest in netting technology may help resolve the question of whether dip nets represent a recent addition to the region's fishing technology (see also Ambro 1966).

According to Driver and Massey (1957:276), the use of net bags is confined to the western United States. Most of what is known about historic hunting nets leads to the assumption that they were nearly all knotted. This is not necessarily the case for carrying or storage nets. It appears that in the historic Great Basin knotted net bags were used (d'Azevedo 1986). This is in contrast to large portions of California where carrying bags come in a variety of forms and are predominantly looped structures (e.g., Dixon 1905; Heizer 1978). Both looping and linking appear to be techniques more common prehistorically, but it is unclear if the ethnographic data are

simply lacking. Undoubtedly, one is also faced with the problem of nets having multiple functions. Several Southern Paiute bands used nets that were doubled over and used as carrying bags (Kelly and Fowler 1986), perhaps removing the need for a separate net bag altogether. Limited historic evidence also indicates the presence of far more expedient netted fabrics that were made quickly with materials at hand and used historically for a variety of purposes (e.g. Bates 1983).

Paralleling the archaeological record, ethnographic data document the use of knotted net structures as a form of head covering. Among the Northern Paiute, for example, hairnets were worn by both sexes for everyday wear (Fowler 1989:109), but all other groups seem to have confined their use to men (d'Azevedo 1986). The Chemehuevi band of Southern Paiute had a more restricted use of hairnets, however. When a husband shared his wife's post-partum birth seclusion, he wore a hairnet on this special occasion (Kelly and Fowler 1986). In adjacent California and southern Oregon, many hairnets were looped and worn by men only in ceremonial contexts (Heizer 1978; Spier 1930).

On a more basic level, although the types of nets associated with particular activities were often recorded, what most early ethnographers noted consistently was the sexual division of labor involving netted fabric production. Cordage making was considered women's work among historic Great Basin groups, but net manufacture was principally a male activity (d'Azevedo 1986; Spier 1930). Women could make use of and mend the nets whenever necessary, but to my current knowledge, there are no reported taboos on women using nets. Evidence for the division of labor in netted fabric production is a point worthy of further investigation and may contribute to our understanding of prehistoric gender roles.

SUMMARY AND CONCLUSIONS

In retrospect, the available archaeological evidence suggests that there was considerable diversity in both the forms and uses of netted structures throughout Great Basin prehistory. Nets employed in subsistence-related activities are of considerable antiquity and almost certainly had great importance given their socially integrative role in historic times. Yet, nets were not limited to subsistence activities. Structural and functional diversity is most readily apparent in the archaeological record of the western Great Basin, where the appearance of diverse netted fabrics suggests that they were employed in a variety of social contexts. In regard to the extent that ethnographic data may inform analyses of archaeological specimens, the data are suggestive, but in need of more thorough and critical examination.

The topics that I have covered and issues that I have raised are necessarily broad in order to illustrate some of the potentials and perils of studying netted structures in Great Basin prehistory. Future research will be vital to untangling these knotty issues and an important avenue for investigation will be existing collections. There is a need to document, with greater certainty, the techniques and forms represented, as I suspect that many new forms and techniques exist in older archaeological and ethnographic collections, but have been misidentified or wholly unrecognized. Targeted radiocarbon dating of complete (or nearly so) and unique individual specimens should be an integral component of this aspect of research. Additionally, the examination of well-provenienced ethnographic specimens will be of considerable value in interpreting archaeological specimens and expanding our knowledge of their historic uses and social contexts.

An important related issue that I have not addressed here is that of correlating cordage

raw materials and twist direction with particular types of netted structures. In particular, attentiveness to the technical attributes of the cordage, the material of singular importance to net production, stands to yield information not only about communities of practice within regional cordage industries, but also potentially the division of labor across time and space.

To conclude, netted structures clearly represent complex technologies important to Great Basin peoples, both past and present. They have been neglected to a great extent in earlier cultural reconstructions and are, I think, worthy of greater attention in the future.

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