OF MILLING AND MASHING: SUBSISTENCE CHANGE AT CA-SCl-65

(THE SARATOGA SITE)

Richard T. Fitzgerald, Jr.
San Jose State University

ABSTRACT

Crude milling equipment found in direct association with two human burials from SCL-65 provide evidence of an archaic milling stone adaptation in the San Francisco Bay region circa 6000 B.P. The existence of an early vegetal focused subsistence pattern and its implications upon Central California archaeology are presented.

INTRODUCTION

According to the prevailing view found in the literature of California prehistory, there were three generalized stages of subsistence practiced by the hunters and gatherers of this state (Wallace 1978). They are the highly conjectural early big game hunting period, followed by the milling stone pattern, and ultimately the acorn based economy. Although there are indications of big a game hunting tradition as evidenced by the presence of fluted points, clear irrefutable data on the nature of this first stage has yet to be found.

However, the excavation of numerous early archaic sites found along the southern California coastline seemingly forms a solid foundation for the tacitly accepted second stage of California's prehistoric cultures.

These sites are commonly referred to as the "Milling Stone Horizon" (Wallace 1955) or the "Encinitas Tradition" (Warren 1968). The various regional manifestations of Oak Grove, (Rogers 1929), Topanga, (Heizer and Lemert 1947), Sayles, (Kowta 1969), Pauma (True 1958), and La Jollan (Rogers 1945) constitute the heart of this pattern. They are believed to represent a basic change in adaptation, which placed a greater reliance upon vegetal collecting and processing for sustenance as indicated by the overwhelming dominance of groundstone tools verses projectile points or other chipped stone tools normally associated with a hunting economy.

Insofar as this transition may be applied to the state as a whole, little evidence of early milling stone adaptations has been documented for central California in general and for the San Francisco Bay area specifically.

Based on rather tentative evidence, I presented a paper two years ago at the Fresno meeting on the existence of a

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archaic milling stone complex for the southern San Francisco Bay area. In that paper I cited data from three sites, SCl-178, (the Blood Alley site), SCr-177, (the Scotts Valley site), and SCL-65, (the Saratoga site). The focus of this paper is on the latter of these three sites. At the time of the Fresno meeting the materials from the Saratoga site had yet to be fully analyzed and thus could only be said to hold potentially important data on the milling stone problem. In the light of a more complete analysis, it has now become clear that the Saratoga site is unique and offers good evidence for a milling stone economy in the San Francisco Bay area circa 6000 B.P. Before presenting the data that supports this contention some back ground on the site and its excavation is required.

THE SARATOGA SITE

CA-SCl-65, is located on the corner of 6th and Big Basin Way (State Highway 9) in the city of Saratoga. Saratoga is a small, affluent community nestled between the base of eastern flanks of the Santa Cruz Mountains and the plain that forms Santa Clara Valley. The site lies on a low terrace that is situated above the southern bank of Saratoga Creek, which is approximately 50 meters away. The elevation of the terrace is 520 feet above sea level, and it is about 2 and 1/2 acres in size (Figure 1). The site occupied about one half of this area. The vegetation of the terrace and the surrounding hills is oak woodland, with a mixture of of chaparral and mixed hardwood forest in the higher elevations. Prehistorically the bay tidelands and marshes of San Francisco Bay were much closer to the site, thus making the site ideally situated for exploiting a variety of diverse environments. The aboriginal inhabitants of SCl-65 would have had access to the mixed hardwood forest, chaparral plants, grasses of the surrounding mountains, riparian forest along Saratoga Creek, the oak savanna in the Santa Clara Valley, and the marshes of San Francisco Bay, all less then a days walk in either direction.

Known disturbance to the site includes a saw mill which was later replaced by a church. However, at the time of the excavation the site was a vacant lot.

Salvage excavation of the site was carried out in late May and early June of 1973 by a variety of volunteers from the now defunct Bay Area Archaeological Cooperative, and by students of West Valley Junior College under the direction of Chester and Linda King. The salvage excavation was prompted by the construction of a condominium complex which, according to Chester King, destroyed about 50% of the known site. A total of 20 excavation units were dug, of which 18 were 3 x 5 foot units, and 2 were 5 x 5 foot in size. Additionally a 2 x 50 foot trench was excavated, along with six exposure units dug into the wall of a cut bank that was created after the bulldozing of the site had begun. All the units were excavated in six inch increments and passed through 1/4" screens. Not counting the six exposure units in which depths were not recorded there were approximately 26 cubic meters of soil excavated from the site.

Unfortunately there is no way to estimate the amount of material destroyed or removed from the site after the construction of the condominiums begun. Monitors were present at the site when the initial bulldozing, began resulting in the salvage of many large elements of the assemblage. Of course, most of these artifacts were not in situ when collected, thus diminishing their value in the analysis of the site. The total number of artifacts found in this manner was 647, or 31% of the total assemblage. In addition to the lost provenience on these artifacts, a severe shortage of accurate notes and level records from the excavation has resulted in considerably reducing the potential for answering specific questions on the timing of the economic transitions that apparently occurred at the site.

Despite these problems with the data base, the Saratoga site still is of singular importance to bay area prehistory due to the unique nature of the unsullied data and the reflection it casts upon the assemblage as a whole.

The first, most striking attribute of SCl-65 is the sheer number of ground, pecked, battered or pitted artifacts. Four hundred and six whole or fragmentary specimens were recovered from the site. This is a remarkable number of groundstone artifacts compared, for instance, to the bay shell mounds, example at the Ala307 (West Berkeley Mound), 396 cubic meters of soil excavated by Wallace and Lathrap (1975) produced only 203 specimens of ground, pecked, and battered stone. Davis and Treganza (1959) report recovering only 103 mortars and pestles from several years work at the Ala-328, the Patterson mound.

Given the environmental context of the bay mounds, it is perhaps not surprising that the yield of tools for processing vegetal resources is relatively low compared to the savanna and chaparral rich lands that existed around the Saratoga site.

However, two sites located in the lower Santa Clara Valley (SCl-178 and SCL-163), both with a similar environment to that of the Saratoga site, were found to contain relatively low yields of groundstone per cubic meter excavated. Only 48 groundstone artifacts were recovered from 169.3 cubic meters of soil excavated at SCl-178, and 107 groundstone specimens from 53 cubic meters of soil at SCl-163 (Hildebrandt 1983).

Because of the relative importance of the groundstone artifacts from the Saratoga site, they were subjected to a careful analysis that recorded the type, shape, maximum length, width, depth, and placement of each discernible wear pattern, as well as standard measurements of weight, thickness, and size of each specimen. Based on this analysis 9 main categories of ground and pecked stone were formed, representing 79% of the assemblage, with the remaining 21% being miscellaneous ground or pecked stone. The amount of wear and degree of care in manufacturing exhibited in the the 9 categories of tools ranged from extremely casual usage of any suitable rock to finely pecked and polished, finished artifacts. Generally

speaking the mortars and pestles exhibited more craftmanship, whereas the milling tools were more shaped by use rather then design. If lumped together the 62 mortars and 39 pestles consituted 24.8% of the assemblage, while the 63 milling stones and 86 handstones made up 36.5% of the groundstone artifacts. In numerical order the remaining assemblage is as follows: 54 miscellaneous groundstone pieces or 13.3% of the total, 40 hammerstones for 9.8%, 31 pitted stones for 13.3%, 15 miscellaneous pecked stones for 3.6%, 9 anvils for 2.2%, 4 stone balls for 0.9%, and finally, 3 edge battered cobbles or pebbles for 0.7% of the total groundstone assemblage. These data, although clearly showing the dominance of milling tools over the mortar/pestle tools, is of little significance in the absence of as of yet well defined components for the Saratoga site. The presence of the milling equipment in itself does not connote great antiquity, and it is not unique for these tool types to be used all the way to the ethnographic period.

What sets the Saratoga site apart from other sites in the bay area which contain mixed assemblages of groundstone tools is the antiquity that can be assigned to at least a portion of the milling tools. Prior to the grading of the Saratoga site four burials were recorded. Three of these burials were located in a single unit (unit 3), the fourth in exposure F. All four burials were poorly preserved, highly fragmented, and found beneath cairns.

Of these four burials, numbers 1, 2, and 4, were removed while burial 3 was left in situ. The burial records are rather sketchy, with no clear record of burial number 3 and no record of the cairn for burial number 2. This loss of data is magnified by the fact that burials 1 and 2 represent the oldest dated human remains yet found in the San Francisco Bay region.

Radiocarbon dates derived from the bone collagen of burials number 1 and 2, were 5995 +/-150 and 6450 +/-160 respectively. Table 1 presents the chronological position of these two dates relative to other early dates on human remains and sites of the region.

Although the Saratoga burials date to circa 6000 B.P. there are no fewer than 19 older dates from SCr-177, (the Scotts Valley site) ranging from 6540 to 12,520 B.P.(personal communication Cartier 1989). The Saratoga burials may be considered very significant in the respect that they indicate the presence of a archaic milling stone economy for the San Francisco Bay area.

A close examination of the cairn over burial 1, the best documented of the four burials, reveals the presence of a very crude milling stone tool assemblage.

Table 1.

SELECTED 14C DATES FROM THE SAN FRANCISCO BAY REGION

Site	matl.	Lab#	AGE B.P.	Ref.
CA-SMA-77	shell	UCR-0961	3460+/-360	Breschini 1986
CA-ALA-307	charc.	M-0127B	3700+/-300	Breschini 1986
Stanford M	bone c.	UCLA-1425	4400+/-270	Gerow 1974
Sunnyv. M	charc.	I-06977	4460+/-95	Gerow 1981
Bart skelt	O. clay	W-2463	4900+/-250	Breschini 1986
CA-MRN-17	bone	UGA-4592	5575+/-220	Breschini 1986
CA-SCl-65	bone c.	WS-3635	5995+/-150	Fitzgerald 1989
CA-SCl-65	bone c.	WS-3636	6450+/-160	Fitzgerald 1989

Key: matl.= material charc.=charcoal; Stanford M= Stanford Man II burial; Sunnyv. M= Sunnyvale Man burial, bone c.= bone collagen Bart skelt= Bart skelton; O. clay= Organic clay; UCR= University of California Riverside; M= University Michigan; UCLA= University of California Los Angles; I= Teleydne Isotopes; W= U.S. Geological Survey; UGA=University of Georgia; WS= Washington State;

Figure 2 indicates the type of milling tools found and their position with the scant human remains. At least three milling stones were present in the cairn, along with one very crude handstone. Two of the milling stones were classified as shallow single basin milling blocks (Basins > 0.8 cm) and the third as a single surfaced milling slick. The cairn also contained a small group of cobble tools, as well as miscellaneous pecked stone and fire cracked rock.

The cairn over burial 4, as seen in Figure 3, the next best documented, yet undated burial presents a provocatively different pattern than burial 1. According to a first hand account by Judy Berthgold, one of the volunteers working at the site, the three burials in unit 3, had "metates" placed over the skulls. According to the burial notes, burial 4 also had a metate placed over the skull. Yet when the cairn of Burial 4 was analyzed, it was found to hold a very different group of tools and tool fragments. The "metate" turned out to be a crude hopper mortar. Also present was a large pestle blank in a early stage of manufacture, as well as a well worn thermally affected handstone. Many more artifacts were found in this cairn than are shown in Figure 3. There were no less then 18 pieces of groundstone, of which four were small pitted stones with some grinding wear.

The presence of the mortar and pestle complex is in marked contrast with the crude milling tools contained within the burial cairn of burial 1. This distinction between the cairns was not lost upon Chester King, who suggests that there existed two distinctive cemeteries at the site based on the difference between the cairns and presumably, the horizontal and vertical placement of the burials in the site.

An alternate explanation for the differences found between the burial cairns is that there existed considerable variability in the composition of the cairns constructed for the dead and that no one cairn represents the whole pattern. A third possibility is that the differences between the cairns represent two entirely different groups of inhabitants that shared a similar burial mode, if not a different subsistence regime. Given the problems with the data these issues may never be resolved, yet there are indications that the site was occupied at least periodically for the next 5000 years.

There are several lines of evidence that point to this conclusion. First, and perhaps foremost, is the obsidian hydration data. A total of 73 specimens of obsidian were submitted for hydration from the site. Of these, 57 had readable rims. Forty four (77%) were of Napa obsidian, 3 (5%) were of Annadale, 6 (10.5%) were of Bodie Hills, 2 (3.5%) of Casa Diablo, and 2 (3.5) are still of a undetermined source. The Napa obsidian hydration results range from a high of 7.2 microns to a low of 1.5. microns. However, the bulk of the hydration readings (32, or 72%) fall between 3.0 microns and 5.0 microns. These data seem to provide evidence that obsidian use at the site was at its peak

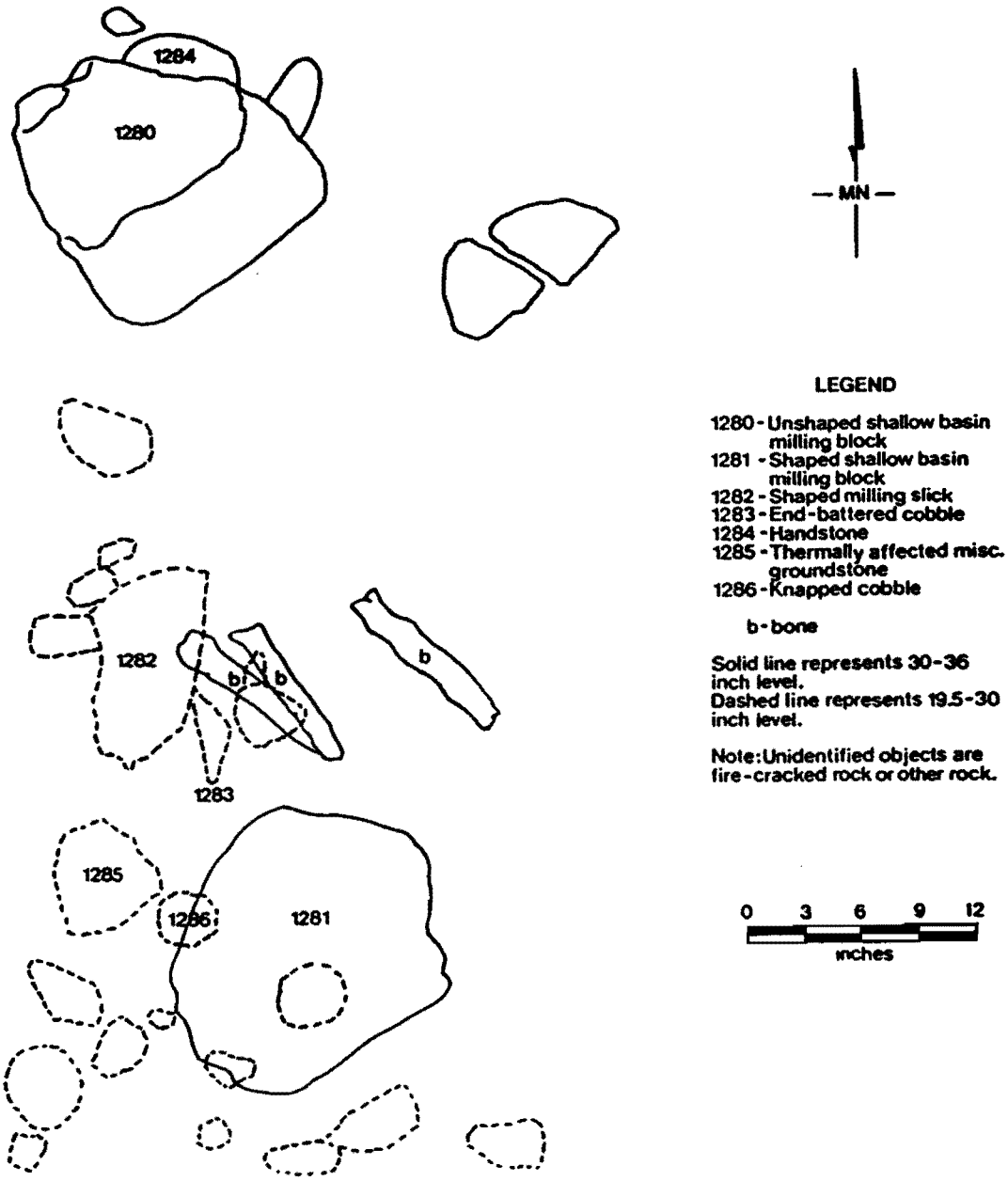

Figure 2. Burial 1, with associated rock cairn.

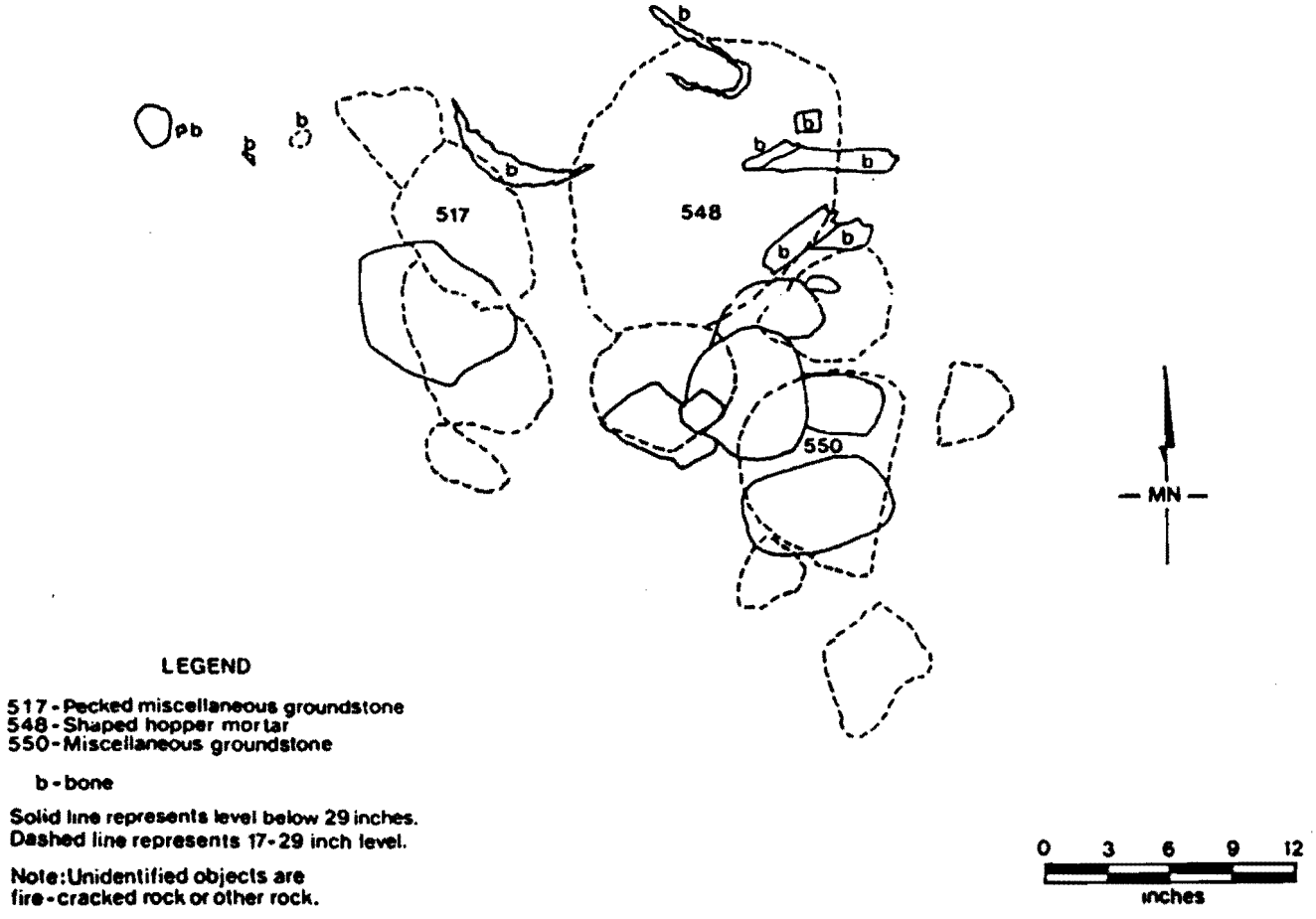

Figure 3. Burial 4, with associated rock cairn.

between circa 4000 B.P. and 1500 B.P. based on Origer's rate of hydration for Napa obsidian (Origer 1987). Other indications of the sites temporal span come from the presence of two sets of temporally diagnostic artifacts. The first are three shell beads.

The earliest bead is a double biconically drilled Haliotis button bead type uCA4j, with strong early affiliations (circa 4000 to 2000 B.P.) according to Bennyhoff's bead typology (Bennyhoff and Hughes 1987). The other two beads fall into the C-2 class or split drilled variable shelved Olivella with early middle period circa (2000 B.P.) associations for the San Francisco Bay area.

The second set of temporally diagnostic artifacts are the few projectile points found from the site. Of the 20 odd bifaces found at the site 7, are diagnostic. The oldest type are 2 Rossi square stems, a point type found in and around the bay area and especially on the coast, where at Mnt-391 five were recovered from two burials that were dated to 3270 +/- 90 and 3620 +/-90 years B.P. (Jones and Hylkema 1988). The other five are classified as Stanford Man points, 2 large ones and three small. These points date to circa 4500 B.P., based on the date derived from the Stanford Man II burial. In summary all these data seem to support an occupation of the site between 4000 and 2000 B.P., a minimum of two thousand years beyond the dated milling assemblage from burial 1.

CONCLUSIONS

The clear evidence of milling tools found in direct association with a burial dated to 6,000 B.P. and a second burial dated to circa 6400 B.P. has two direct implications for the prehistory of Central California.

First, these dates confirm the antiquity of cultural activity in Central California. Second, the early dated milling tools effectively place Central California archaeology into alignment with the basic tenet on the nature of subsistence practices during the early archaic period.

Perhaps the next most significant aspect of the Saratoga data is the theoretical implications it holds for the milling stone pattern as found elsewhere in the state. The preponderance of groundstone tools, coupled with the paucity of projectile points, and particularly the cairns of milling tools all seem to point to a south coast milling stone affiliation. However, many problems beset the integration of the existing milling stone manifestations from one region to the next. Because of their extraordinary geographical distribution, milling stone complexes were initially defined in terms of a single cultural tradition. Although, this view has recently become less viable, it is still widely implied in the literature. For instance, in Warren's "Encinitas Tradition" he proposed two "concepts as vehicles of presentation: (1) cultural tradition; and (2) cultural ecology" (1968:1). According to Warren, the cultural tradition was de-

fined "as a generic unit comprising historically related phases" (1968:1). Although Warren was careful to point out the importance of ecological factors in terms of settlement patterning and "certain aspects of socio-political organization" (1968:1), it is nonetheless implied that the milling stone pattern had a common cultural tradition "capable of adapting to several environments through time and space" (1968:1). The cultural connotations inferred are largely responsible for de-emphasizing the regional differences between the various expressions of the milling stone pattern. By ignoring these differences the singular cultural tradition theory on the origins of the milling stone pattern is encouraged. Basgall and True (1985) offer a concise foil to the cultural/historical view in a general overview of the status of the milling stone concept, in which they state that:

> it is imperative that we explicitly outline those aspects of the archaeological record which are being integrated by the rubric Milling Stone...If the Milling Stone concept is meant to integrate archaeological data in terms of shared economic or adaptational attributes, then any assemblage with high proportions of millingstones, manos, core-cobble implements, crude hammers, and relatively low frequencies of refined bifacial tools is Milling Stone regardless of age (Basgall and True 1985:3.53).

Noting that there is considerable differences between the various assemblages of the milling stone pattern of Southern California, Basgall and True (1985) state that most of the variability can be explained:

> under the assumption that almost any population residing in these regions, with access to the same technologies, would have dealt with their environments in a generally similar fashion (and)...would possess functionally similar artifact assemblages...(Basgall and True 1985:3.54).

It is in this light that the variability of the milling stone pattern is best examined. However, a caveat to this view should be included regarding the often strong similarities found in milling stone sites. It is not sagacious to ignore that specific socio/technological specialized traits are held in common amongst the assemblages of the milling stone pattern. Culturally determined matters such as burial mode or grave goods can not be strictly attributed to subsistence practices or independent invention. It is possible, if not likely, that historical connections exist between the various milling stone manifestations.

The appearance of culturally new or distinctive behavior once introduced to a region, may be sustained long after the origins of that behavior have disappeared. In other words, shared cultural traits between regions need not be synchronous in nature because their maintenance or longevity is dependent upon any number of culturally determined factors.

It can be seen from the preceding discussion that the milling stone pattern presents a number of complex problems in need of resolution. Yet despite these problems, it also carries the potential for revealing the intricate relationship between subsistence behavior and cultural process. In that regard, although there exist many problems with the data from the Saratoga site, the existing viable data may ultimately contribute to a better understanding of the nature of the milling stone pattern.

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