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# BULLETIN OF THE MASSACHUSETTS ARCHAEOLOGICAL SOCIETY



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**SPRING, FALL 2002**

IN HONOR OF DR. BARBARA E. LUEDTKE

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*BARBARA E. LUEDTKE 1948 - 2000*

These papers were presented in honor of the late Dr. Barbara E. Luedtke at the Annual Meeting of the Massachusetts Archaeological Society on October 21, 2000, by colleagues, friends, and former students. They are a start in bringing to fruition her vision for Massachusetts archaeology in the 21st century, published in her last paper for the M.A.S. in Spring 2000, "Archaeology on the Boston Harbor Islands after 25 Years," (*Bulletin of the Massachusetts Archaeological Society* 61(1):2-10).

Special thanks are due to the Eastern States Archaeological Federation for their Louis A. Brennan Publications Award that partially funds this issue.

## BOSTON HARBOR: THE SHAPE OF THINGS PAST AND PRESENT

Brona G. Simon

One of the major contributions to archaeological research stemming from the Central Artery/Tunnel project was a reconstruction of the ancient shorelines of the Boston area. As a result, archaeologists are now able to understand the geographical and ecological context of sites that have been found on the Boston Harbor islands and on the modern coasts of Boston, Quincy and Hull. The coastal zone of this area has changed dramatically over the past 12,000 years, due to sea level rise and coastal dynamics. The site locations that were selected by Native Americans also changed through time. This paper will explore the distributions of site locations from the Early Archaic through the Late Woodland/Contact period, with reference to the changing topography of the coastal zone. The results of the archaeological investigations of three sites in the Central Artery project will also be discussed.

### **Geomorphology of Boston Harbor**

The following discussion of the geomorphology of Boston Harbor is taken from David Aubrey's work for Timelines, Inc.'s archaeological data recovery report for the Spectacle Island Site (Aubrey 1994). Aubrey's methodology for reconstructing the prehistoric geomorphology of what are now the submerged lands under Boston Harbor and nearby offshore areas was to use a model of passive submergence. Passive submergence assumes that the current bathymetry (i.e. the current underwater topo-

graphy) remained constant as sea level rose. It relies on the use of "relative sea level rise," which takes into account the isostatic rebound of the landmass after glacial retreat. Aubrey also recognized that coastal dynamics resulting from sea level rise, storms, tides, waves, and river scouring/deposition were important factors that redeposited the pre-existing glacial deposits on the former coastal plain and the drumlins that now comprise the harbor islands. Aubrey used this dynamic model in his more detailed study of the geomorphology of Spectacle Island, while employing the passive model for the greater Boston Harbor area (Figure 1).

At 10,000 years ago, the shoreline was located 8 km east of the present entrance to Boston Harbor (Figure 1). Sea level was 28.1 m lower than today, with only 0.56 m tidal range (i.e. the distance between high and low tide). This is in sharp contrast to today's broader tidal range, which is 1.48 m (Aubrey 1994). The short tidal range continued until about 8,000 years ago.

In addition, between 10,000-7,000 years ago, the rate of sea level rise was more rapid than at any other time in the recent era, 4.5 mm/year, which is four times faster than the current rate of 1.1 mm/year (Aubrey 1994).

Between 9,000-7,000 years ago, tidal range continued to be short, but numerous embayments and peninsulas were formed (Aubrey 1994). The number of embayments and peninsulas were increased even more by 6,000 years ago. At this time, the inundation of Boston Harbor began with the dramatic scouring of two major trenches running east-northeast, separated by a landform that included the modern islands from the Brewsters to

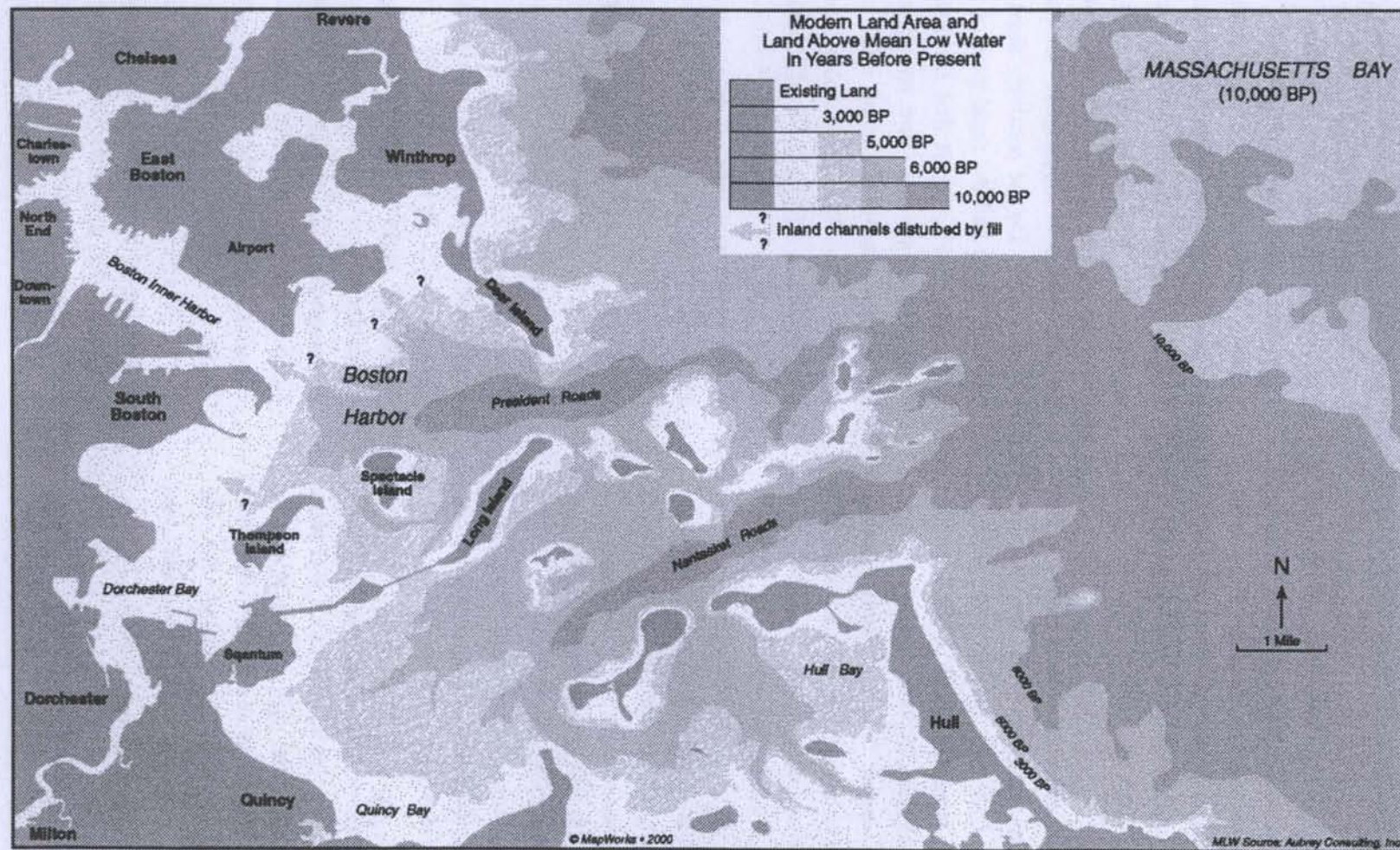


Figure 1. Boston Harbor Area Sea Level Rise Map (from Aubrey 1994).

Long Island. Aubrey believed that these two trenches were likely to have been formed by draining glacial meltwaters from mainland Massachusetts. They are now known as the Presidential Roads and the Nantasket Roads. Coastal erosion widened the mouths of the two trenches. The majority of the Boston Harbor islands were still connected to the mainland on a massive peninsula that was flanked by the two meltwater trenches.

At 5,000 years ago, the outer island landmasses became separated from the mainland (Aubrey 1994). Calf and the Brewster Islands comprised a large, irregular island, while Lovell's, Gallops, George, Peddocks, and Rainsford were individual islands, larger than they appear today. Thompson's, Spectacle and Long Island were still connected to the mainland. It was at 5,000 years ago that tidal range finally exceeded 1 m in length and the rate of rise in sea level started to slow down. As the width of the harbor openings began to widen, the depth of the harbor became deeper and wave energy became greater. The energy of coastal tides, waves, and storms began to increase the erosion and loss of the landmass. This coastal erosion continues through the present day. Most affected are the northern sides of the islands, which are especially vulnerable during northeasterly storms.

At 3,000 years ago, Spectacle and Long Island became separate islands. From 3,000 years ago to modern times, the rate of sea level rise slowed, and the tidal range continued to increase, creating a more stable environment for the development of mudflats, estuaries and salt marshes.

### **Archaeological Implications**

Review of the site files at the Massachusetts Historical Commission indicates that there are no

PaleoIndian sites or findspots recorded for this study area. A single, isolated Early Archaic point was found on Long Island (Luedtke 1984). Only five Middle Archaic sites have been found in the study area. These all appear to have been interior settings, between .0.4-3.2 km away from the coastline at the time. What could account for the lack of early sites in this area? Are the modern islands too far away from the prehistoric shorelines? Are PaleoIndian and Early - Middle Archaic sites now submerged? Or have they been eroded away? Do the relatively short width of the inter-tidal zone and the rapid pace of inundation of the coastal land suggest that the PaleoIndian and Early Archaic periods were not optimal times for the natural establishment of estuaries in Boston Harbor? Possibly, but more detailed geomorphological studies of soil borings from the harbor area are needed to identify the specific results of the dynamics of coastal actions such as tides and storms and redeposition by rivers and streams. Through the application of a dynamic model, more detailed and accurate reconstruction can be developed (Aubrey 1994). Very specific areas where river mouths and estuaries might have taken hold could be identified and subjected to underwater archaeological exploration. Robert Ballard and Kevin McBride are currently conducting such a survey off the coasts of Connecticut and Rhode Island, having used geomorphological studies to target submerged Paleo-shores, ridges, river mouths, marshes, and estuaries for underwater investigation (Anon. 2001).

Nearly two dozen Late Archaic sites have been recorded on the harbor islands and the nearby mainland. The lower rate of sea level rise certainly was a factor in the survival of these sites today.

The majority of recorded sites on the islands are Middle or Late Woodland (Luedtke 2000). This is certainly to be expected, since by

that time, the islands, estuaries, and salt marshes had become well established, with predictable and dependable resources for Native procurement and use (Luedtke 2000).

### **The Spectacle Island Site (19-SU-38)**

The Spectacle Island Site (19-SU-38) was going to be impacted by the Central Artery/Tunnel project. Formerly used as a dump by the City of Boston, the dump had not been properly capped to prevent environmental degradation from leachates. The clay that was excavated from the construction of the Ted Williams Tunnel was to cap Spectacle Island, and set the stage for future development as a state park. In compliance with the National Historic Preservation Act, the Spectacle Island Site was subjected to an archaeological data recovery program. This summary of the findings is taken from Timelines' reports (Edens and Kingsley 1994; McHargue 1996).

The site contained two good-sized shell middens that dated to the Middle and Late Woodland periods. Twelve radiocarbon dates were analyzed. Dates from the southern midden ranged between  $1414 \pm 110$  B.P (GX-18221) and  $750 \pm 60$  BP (Beta-61449). Dates for the northern midden ranged between  $1040 \pm 110$  BP (GX-18220) and  $360 \pm 60$  BP (Beta-61450). The shell in both middens was predominantly soft-shell clam (90%), with mostly blue mussel secondarily. Few finished tools of stone were found, but a considerable number of bone tools and ceramics were discovered. The bone tools included unbarbed points or leisters, barbed harpoon tips, awls, beads, and many worked pieces of bone (Figure 2). Faunal remains include deer, dog, raccoon, beaver, cod, flounder, wrasse, sturgeon, alewife, bluefish, Canada goose, brant goose, black duck, bay duck, scoter, cormorant, gull, and turtle. Hickory nuts were also found in the midden. The good

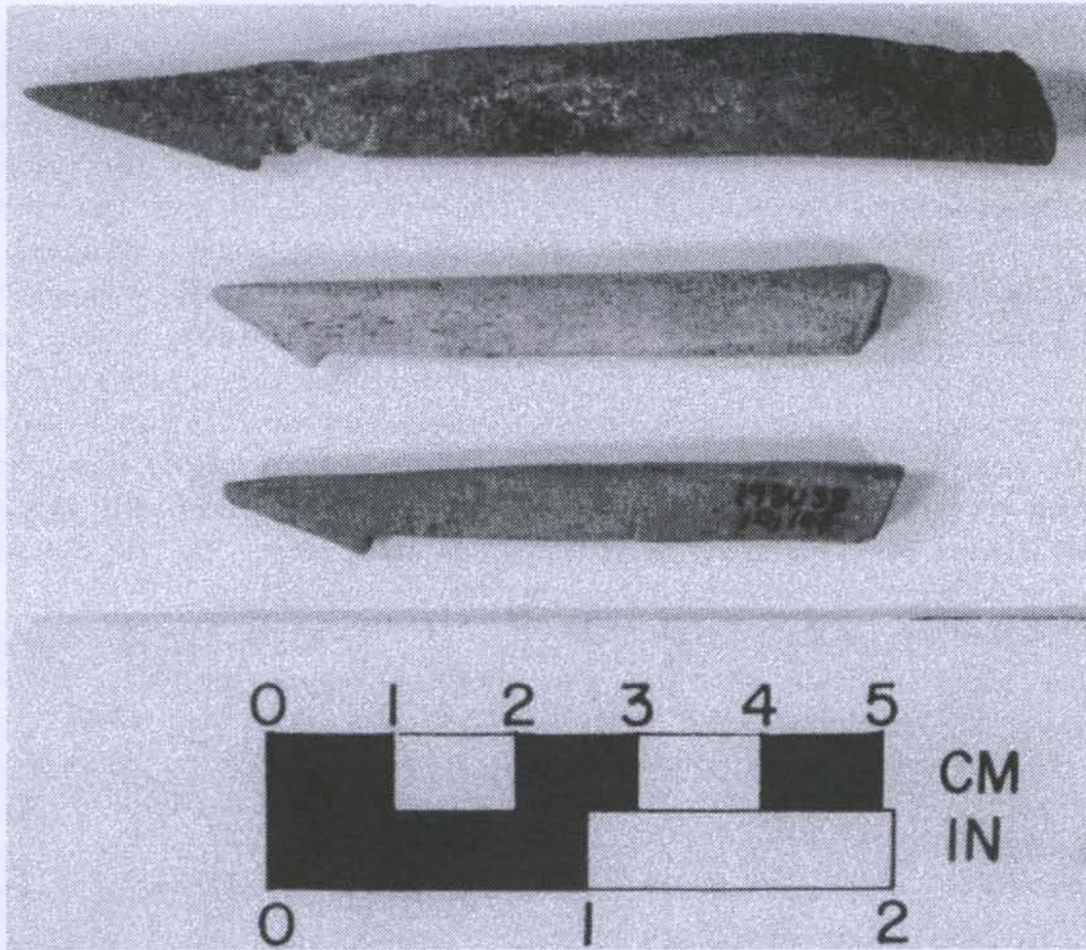
preservation of faunal remains reveals that the Natives' diet was highly diverse and probably very satisfying. The faunal remains and hickory nuts suggest a fall-winter occupation of the site, with some use in the spring. The principal activity on the site was the harvesting and processing of soft shell clam, followed by cod fishing. No evidence of any domesticated cultigens was found. However, the discovery of three ceramic sherds from smoking pipes suggests that tobacco had been used on the site. The authors concluded that the Middle-Late Woodland communities of the Neponset River estuary and watershed seasonally reoccupied this site for specific resource procurement.

As a result of a detailed analysis of soil borings and application of the dynamic model of sea level rise, Aubrey (1994) determined that Spectacle Island was two separate islands during the Middle and Late Woodland periods. The shell midden site was situated near the southern end of the southern island. Of particular interest, Aubrey noted the presence of broad tidal flats to the east of the site and a spit of land extending southward from the site that may have contained a sheltered lagoon-like environment (Aubrey 1994). This geomorphological reconstruction is an important aspect of understanding the Natives' selection of the site.

### **The Water Street Site (19-SU-48)**

The Water Street Site was discovered during the archaeological investigation of the Central Artery North Area project in Charlestown. This summary is taken from the Institute for Conservation Archaeology's report on the archaeological data recovery of the site (Shaw et al. 1984). A significant portion of the site had survived the historic period development along Water Street; it was truncated horizontally by the construction of a foundry, and overlain by historic period deposits.





**Figure 2.** Bone Tools from the Spectacle Island Site.

Archaeological data recovery revealed that the site had been occupied during the Late Archaic, Early and Middle Woodland periods. At that time, the site was located on the shore of the lower Charles River estuary, characterized by smaller mudflats and salt marshes than farther upstream. A small stream probably emptied into the Charles River near this site.

The Water Street Site did not contain any shell middens; there were three small pit features that contained quahog, oyster, and softshell clam, respectively, but no diagnostic artifacts. Instead, the site contained mostly stone tools, ceramics, and hearth and pit features typical of a seasonal campsite. The Late Archaic component of the site

was identified by the presence of a small stemmed, a small triangular and an Atlantic point and contained a low diversity of tools types and no features. It covered only a small area of the site. The Early Woodland occupation covered the largest area and contained a very high density and diversity of tool types, flakes, ceramics, and features. Diagnostic artifacts included Meadowood and Rossville points. A radiocarbon date from a hearth feature that contained ceramics dated to  $2370 \pm 80$  BP (Beta Analytical, no specimen number referenced). Two rolled copper beads were also found in the Early Woodland area of the site. The Middle Woodland occupation was identified by a Fox Creek point. It encompassed a smaller area

than the Early Woodland occupation, with less diversity of activities.

The Early Woodland tool assemblage contained a high frequency of retouched flake tools, which were subjected to multi-variable attribute analysis (Figure 3). The result was the separation of ten different categories of flake tools, which the authors offer for comparisons with other site assemblages (Shaw et al. 1984:70). A tentative functional interpretation was that the flake tools associated with the Early Woodland occupation were used for processing large quantities of soft materials like vegetal plants or fish. In this instance where faunal and floral remains were absent, lithic analysis was used to reconstruct the types of foods that were processed.

#### The Town Dock Prehistoric Site (19-SU-59)

During the archaeological data recovery of the historic period Town Dock in the Central Artery North Area project in Charlestown, archaeologists from the Public Archaeology Laboratory, Inc. (PAL) discovered a prehistoric lithic workshop under a natural peat layer on the

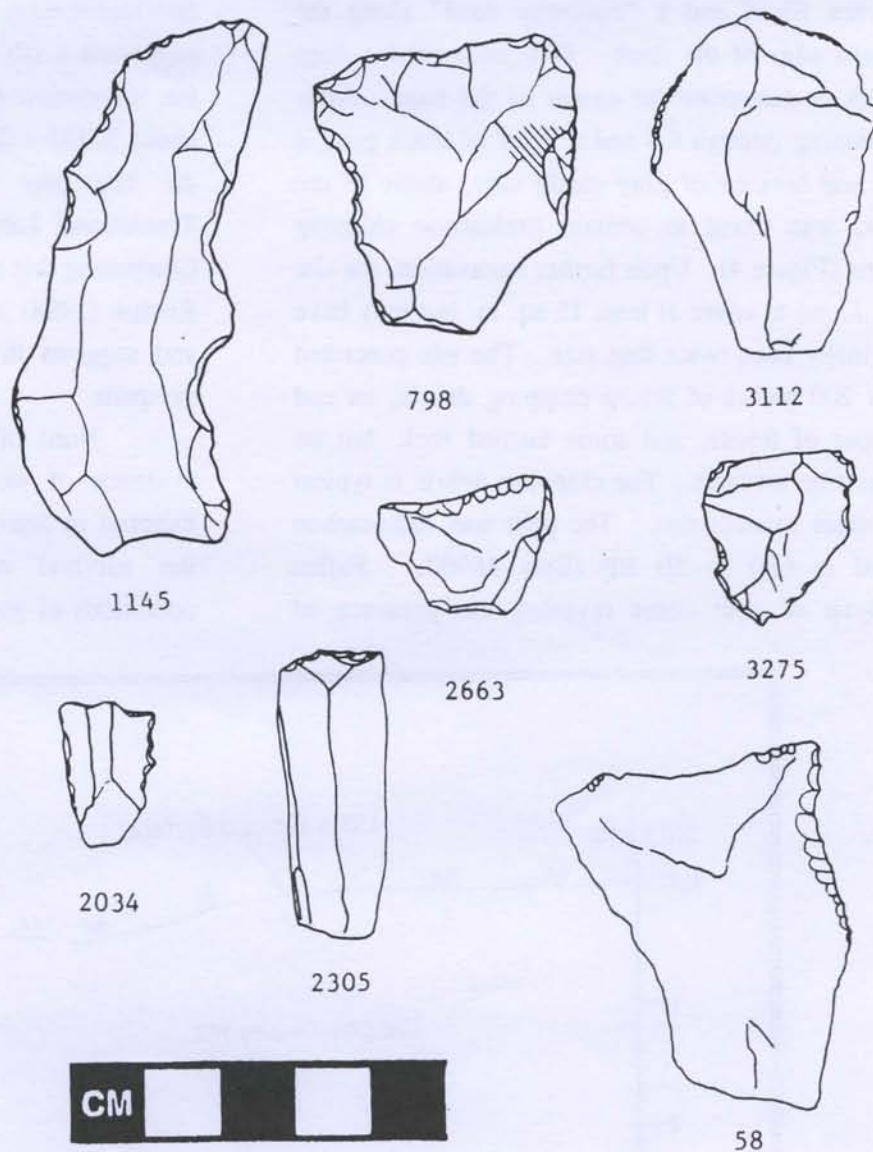


Figure 3. Flake Tools from the Water Street Site (from Shaw et al. 1984)

edge of the historic dock. The significance of this site is its survival in so urban an area as Charlestown. This summary is taken from PAL's report on their investigation (Ritchie 1994).

The historic Town Dock was originally constructed in the 17<sup>th</sup> century in a small, sheltered bay on the north shore of the Charlestown peninsula. The dock was improved over the years, most recently during the 19<sup>th</sup> century. The dock area was abandoned and filled in 1836. PAL uncovered the 19<sup>th</sup> century dock, which included a

wooden wharf and a "corduroy road" along the eastern edge of the dock. PAL excavated a deep trench to determine the extent of the road. After excavating through fill and a layer of black peat, a thin soil horizon of gray sandy clay, about 15 cm thick, was found to contain prehistoric chipping debris (Figure 4). Upon further excavation, the site was found to cover at least 15 sq. m, but may have originally been twice that size. The site contained over 200 pieces of felsite chipping debris, an end scraper of felsite, and some burned rock, but no diagnostic artifacts. The chipping debris is typical of biface manufacture. The peat was radiocarbon dated to  $680 \pm 50$  BP (Beta 46960). Pollen analysis of peat cores revealed the presence of

*Spartina* species, indicating that by 680 BP the peat supported a salt marsh. Ritchie (1994) argues that the inundation of the site area may have started about 3,000 - 2,000 years ago, and suggests that the site may have been associated with the Transitional Late Archaic/Early Woodland period. Comparing this site to the nearby Water Street Site, Ritchie (1994) observed a lack of functional tools and suggests that this site was a very temporary campsite.

None of the lithics on the site showed any evidence of wear or abrasion that occurs when exposed to heavy wave action or currents. Thus, the survival of the site resulted from local conditions of gentle inundation and slow silting up

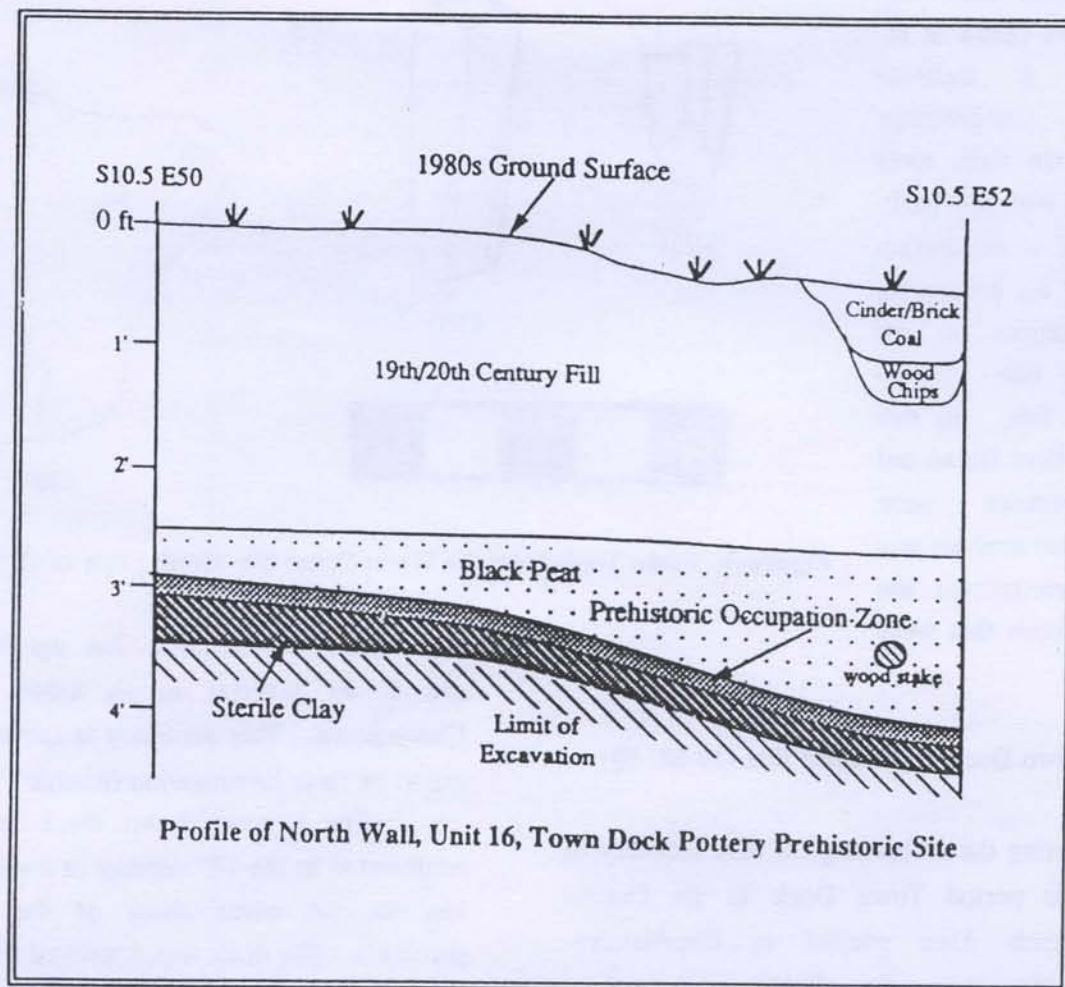


Figure 4. Town Dock Prehistoric Site Stratigraphic Profile (from Ritchie 1994)

of deposits that ultimately resulted in the development of salt marsh covering the site.

### Summary and Recommendations

This article highlights recent contributions made by archaeological and geomorphological investigations that were completed for the Central Artery/Tunnel project in Boston. The geomorphological study helped to provide a general framework for understanding the setting of sites in relation to sea level at the time of their occupation. Questions concerning the lack of PaleoIndian sites and the infrequent occurrences of Early and Middle Archaic sites in the Boston coastal area could be addressed through more focussed and detailed geomorphological studies which employ a dynamic rather than passive approach to relative sea level rise, followed by underwater archaeological investigations.

The excavation of a major shell midden site on Spectacle Island provides us with important evidence of faunal and floral remains not often preserved on non-midden sites. In addition, the sample of bone tools is the largest collection of this tool technology from any of the previous excavations on the harbor islands.

The Water Street Site gives us a good glimpse at an Early Woodland campsite. Other than the manufacture of ceramics as a new technology, the site suggests that the general

hunting, fishing, and plant gathering economy continued from the Archaic period. In addition, the site offers a good comparative collection of retouched flake tools. More attention is now being paid to such tool types, as they may have been lithic tools made by and used by women, not men (e.g., Gero 1991; Luedtke in press).

The Town Dock Prehistoric Site is an excellent lesson on where we should be looking for sites in the modern coastal zone. The use of engineer's soil borings would be very helpful in identifying locations of buried prehistoric soil layers that should be tested archaeologically. Soil borings are helpful in identifying buried peat layers, which may be on top of inundated habitation sites like the Town Dock Site, or evidence of tidal marshes where remnants of ancient fishweirs may be found, as in the case of the Boylston Street Fishweirs (Decima and Dincauze 1998).

In conclusion, Aubrey's (1994) geomorphological investigation has given us better images of the changing shape of the Boston Harbor landscape through time. Archaeological discoveries can take on new form within this reconstructed landscape, helping us visualize the settings and thus understand better the distributions of known sites. Luedtke's 25 years of research has provided a clearer picture of ancient Native American technology and culture and sets a solid foundation for the conduct of future research in the Boston Harbor area (Luedtke 2000).

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## CADDY PARK, WOLLASTON BEACH, QUINCY, MASSACHUSETTS: BURIAL? CENOTAPH? CACHE? OR OFFERING?

Thomas Mahlstedt  
Margo Muhl Davis

### *Abstract*

*In July 1999, workers building a new children's playground at the Metropolitan District Commission's Caddy Park discovered a remarkably intact prehistoric archaeological site, consisting of a single feature. The Caddy Park Site (19-NF-467) is located on a small drumlin at the mouth of Black's Creek and Quincy Bay, along Quincy Shore Drive. The feature measured 1 x 2 m and contained 256 in situ artifacts, some in tight clusters suggesting that they were deposited in bags or lashed together. The artifacts, which included large stone blades (one 33 cm long), several adzes and gouges, a whaletail atlatl weight, a whaletail pendant, an unusual whale effigy gouge and net sinkers, suggest a toolkit specially adapted to maritime resources. The presence of red ocher may imply ritual significance. This paper discusses the discovery and subsequent excavation of the feature, summarizes research conducted to date and explores the type of behavior that may have been responsible for this curious deposit.*

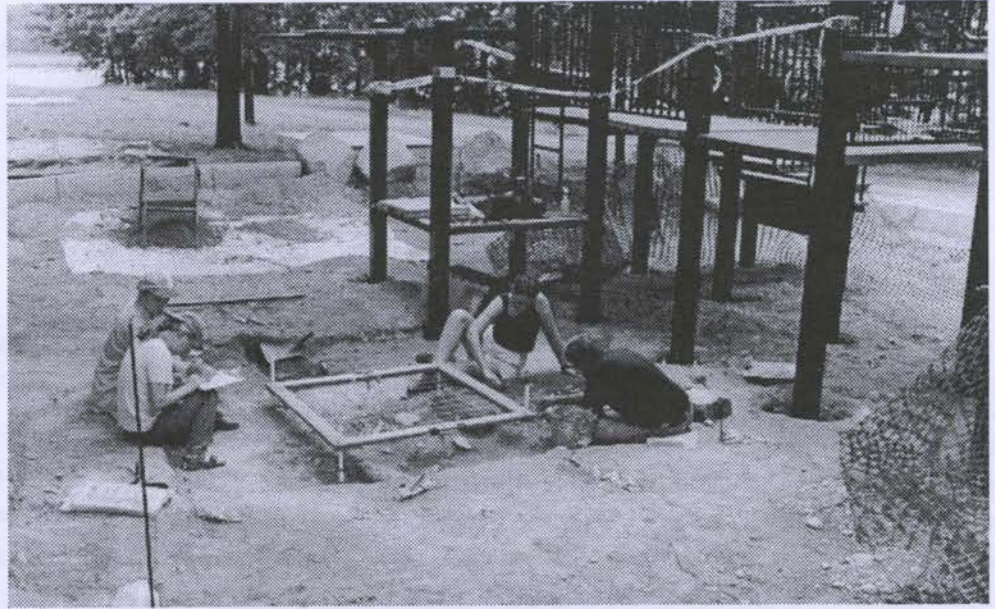
### **Introduction**

In the spring of 1999, as part of the Cultural Resource Management Program (CRM) of the Metropolitan District Commission (MDC), the agency performed a pre-construction archaeological survey of the proposed location of a new tot-lot at Caddy Park. The park is located in the Wollaston Beach Reservation, Quincy, Massachusetts, and is ideally situated on a well-drained knoll adjacent to the estuary of Black's Creek and Quincy Bay.

Background research noted the project area's proximity to Mosswetuset Hummock, Squantum, and the Contact Period *Passonagessit*, and that an unusual number of burials had been encountered over the years in the immediate area. Despite the extremely high archaeological potential and the near perfect ecological setting, MDC's testing, which utilized standard shovel test pits at a regular seven-meter interval along a transect that ran down the center of the drumlin, no evidence of Native American activity was detected. Instead, testing revealed evidence of extensive historic disturbance. MDC archaeologists (Tom Mahlstedt and Bill Stokinger) recognized that the traditional survey method employed was not designed to find special purpose sites, especially burials, which could lie deeper than the 25–31 cm average depth of disturbance, and which, in the case of a flexed burial, may not be much more than ½ m in diameter. Consequently, the archaeologists briefed the MDC resident engineer and contractor on what to look for: "Be particularly aware of unusually red soils or red stains, quantities of charcoal and little white flecks, which could be burnt bone and shaped stone," they cautioned.

To the astonishment of everyone (and even the dismay of some), as the workmen were putting the finishing touches on a play unit, a shovel-full of red ocher-stained sand together with a 33 cm black felsite blade were pulled out of a hole dug for a slide base. The resident engineer, remembering the words of caution, immediately stopped the project. Two weeks of wonderment followed as the MDC, assisted by graduate students from Boston University's Department of Archaeology and other

friends, proceeded to salvage the feature (Figure 1). It is important to note that a test pit (CP5) from the initial survey had missed the feature by only about one meter, which led Bill Stokinger to shrug and comment on the CRM system of survey augmented by cautionary watchfulness ...*Well, it ain't always pretty but it works.*



**Figure 1.** Dental tools and brushes were used in excavating the Caddy Park feature seen here in relation to the play unit being installed (Photo: Kevin O'Malley, MDC).

### Feature and Artifact Descriptions

The site consisted of a single feature shaped something like a “figure eight” or “hourglass,” measuring approximately 1 x 2 m with its long axis oriented slightly west of north (Figure 2). The feature lay between 47–30 cm below existing grade, but the true depth below grade is not known because of extensive landscaping activities through the years, including soil removal, by the MDC. Significantly, the feature lay immediately on top of glacial till, so that when it was deposited it must have been excavated through the overlying soils.

The most distinguishing characteristic of the feature is that it was entirely defined by powdered hematite, or red ocher. All 256 artifacts were restricted to the reddened sands (Figure 2, Table 1). Most were found in situ within the feature, but a few quartz and felsite edge tools were found in small ocher smears deposited by the earthmoving equipment that had sheared off the top of the feature. Within the feature there were very distinct pockets where the ocher was darker and redder. These ocher pockets were found next to and

surrounding several tight clusters of tools. The arrangement of the tool clusters suggests that they were deposited in bags, or lashed together. Ocher staining in these tool clusters was found to adhere to the bottom, as well as the top of artifacts. An arched alignment of six net sinkers hinted at the former presence of a net. As excavation proceeded it became increasingly apparent that the artifacts within the feature were not randomly scattered about, rather they had been placed meticulously, and perhaps with meaning.

Two principal classes of stone tools are represented among the 256 artifacts: flaked or chipped and ground stone tools, implements and ornaments. Both finished specimens as well as those in the process of manufacture are represented, but flaking debris is not. The artifacts include four stone blades (one 33 cm long), a whaletail atlatl weight, a whaletail pendant, an unusual whale effigy gouge, six plummets (Figures 3,4), more than 140 quartz edge tools and possible preforms (including some with bifacial flaking), several adzes and gouges, and polishing tools.

Two categories of implements deserve special attention: the four large blades and the assemblage of adzes.

The largest felsite blade measures 33 cm long and 6.3 cm wide and was manufactured on black porphyritic felsite typically attributed to the Lynn Volcanic Complex (Figure 3). The specimen has a symmetrical profile and flake scars are generally parallel, terminating in the middle of the blade; several scars end in step fractures, with a large step fracture on one blade face. Pressure flaking occurs on all edges and flake scars show remnant edges of flaking platforms that suggest the blade had not been used. The large size and thinness of the blade, coupled with a quartz vein that runs through the middle of the piece attest to the skill of the knapper. A small notch on one blade edge was caused when the worker's shovel struck it: the blade's only apparent blemish.

The two shortest blades (19.8 cm and 15.5 cm) are both made on the same black porphyritic felsite as the large blade, but are stouter than the large blade and have shallow, unevenly spaced notches less than a quarter of the length of the blade from their bases. Both bases are straight, but slanted at 10-degree angles. In plan, the blades of both are slightly straighter on one side than the other.

A fourth blade, made on a green porphyritic felsite is a hybrid of the other three. It is 22.5 cm long and shares the larger blade's general outline and straight base. Its workmanship is also finer than the two notched blades. Nevertheless, it is the same width (5.6 cm) as the two blades described above, giving it their stouter appearance. The material is curious with a strong resemblance to the felsite from the Mt. Kineo region of Maine, although an unspecified source in Rhode Island was also suggested (Barbara Luedtke: personal communication).

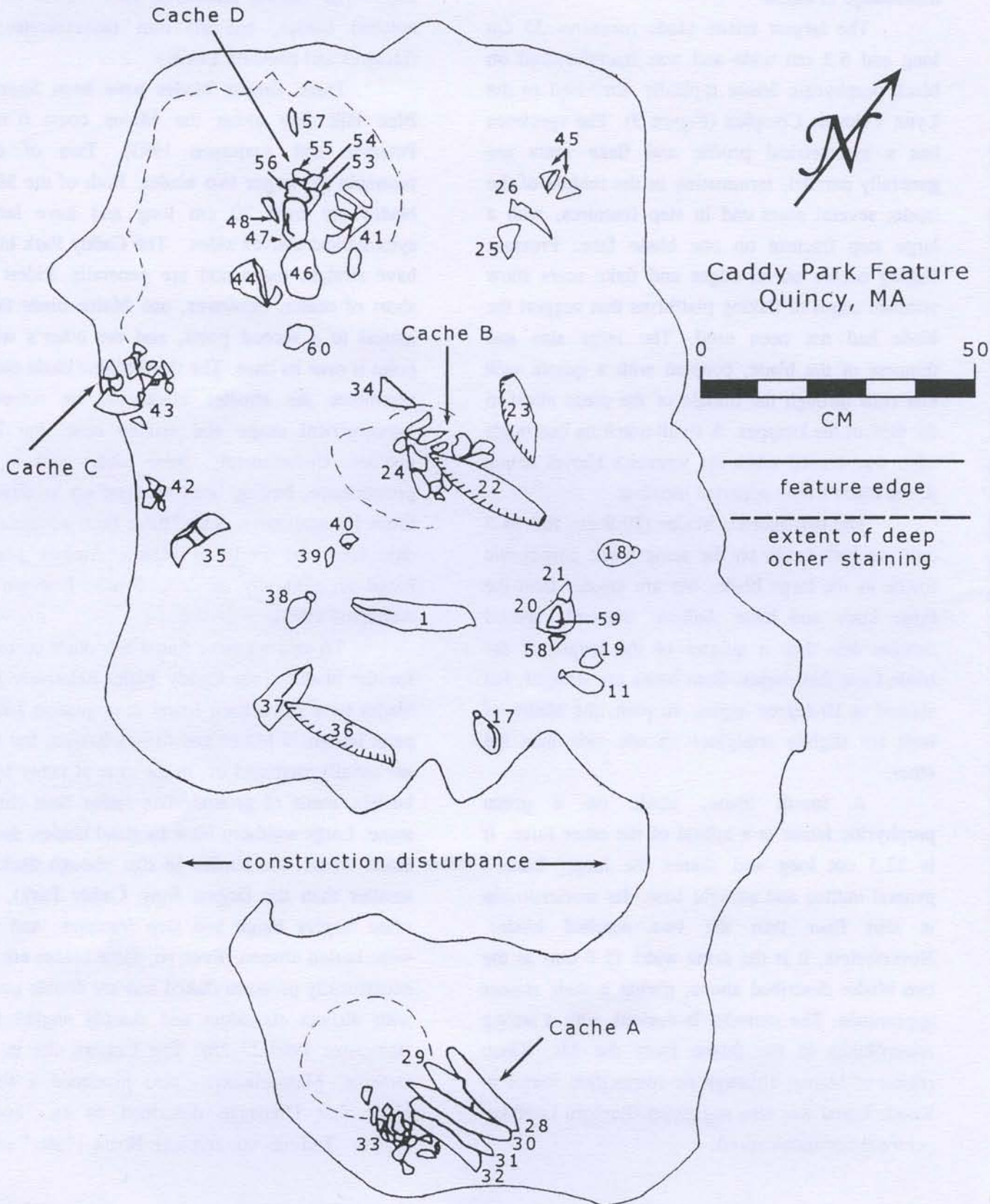
All four blades have relatively flat cross-sections and measure between 1.2 and 1.5 cm thick. The flaking pattern is less regular on the notched blades, but all four demonstrate step fractures and pressure flaking.

Three similar blades have been found in Blue Hill Bay along the Maine coast (Crock, Peterson and Anderson 1993). Two of these resemble the larger two blades. Both of the Maine blades are over 20 cm long and have largely symmetrical convex sides. The Caddy Park blades have straight bases and are generally widest just short of center. However, one Maine blade tapers almost to a second point, and the other's widest point is near its base. The third Maine blade closely resembles the smaller blades in its somewhat asymmetrical shape and slanted base, but lacks notches. Unfortunately, these blades lack a firm provenience, having been dredged up at different times by scallopers. They have been estimated to date from the Early to Middle Archaic periods based on a variety of data (Crock, Petersen and Anderson 1993).

To date we have found few other correlates for the blades from Caddy Park. Relatively large blades have often been found in cremation and red paint burials in Maine and Massachusetts, but these are usually stemmed or, in the case of many Maine burials, made of ground slate rather than chipped stone. Large southern New England blades, such as Boats blades, are similar in size (though decidedly smaller than the largest from Caddy Park), they often display hinge and step fractures, and most were buried unused. Even so, these blades are only occasionally pressure flaked and are double pointed with distinct shoulders and sharply angled bases (Dincauze 1968:27-28). The Coburn site in East Orleans, Massachusetts, also produced a similar blade that Dincauze described as an "atypical Turkey Tail or an atypical Boats blade," which



**Figure 2. Caddy Park Feature.** (See Table 1 for key to artifacts.)



**Table 1. Caddy Park Artifact Catalog** (see Figure 2 for positioning of artifacts)

<b>Artifacts from Feature<sup>1</sup></b>	
1	"whale" gouge
2	quartz fragment
3	quartz edge tool
4	4 quartz edge tools/preforms <sup>2</sup>
5	quartz edge tool/preform
6	see artifact 43
7	see artifact 43
8	quartz edge tool
9	see artifact 59
10	see artifact 59
11	plummet
12	quartz edge tool
13	2 quartz edge tools
14	quartz edge tool
15	quartz flake/edge tool
16	3 quartz edge tools
17	plummet
18	plummet
19	quartz edge tool
20	quartz edge tool/preform
21	quartz flake
22	green felsite blade
23	porphyritic felsite blade
24	42 edge tools/preforms: 31 quartz, 8 banded felsite, 3 other
25	polishing stone
26	broken red slate pendant
27	see artifact 45
28	chipped and pecked adz
29	large oval preform or core
30	adz/gouge
31	chipped adz preform
32	pecked adz
33	65 quartz edge tools/preforms, 1 pebble
34	quartz core
35	winged atlatl weight
36	large porphyritic felsite blade
37	adz
38	plummet
39	quartz small stemmed point
40	quartz edge tool
41	7 edge tools/preforms: 6 quartz, 1 other
42	4 quartz edge tools/preforms
43	5 small stemmed points, 24 quartz edge tools/preforms
44	backed porphyritic felsite biface
45	2 quartz edge tools
46	oval disk
47	oval disk
48	quartz edge tool/preform
49	quartz edge tool/preform*
50	quartz edge tool/preform*
51	quartz edge tool/preform*
52	quartz edge tool/preform*
53	banded felsite preform
54	quartz flake
55	felsite flake
56	polishing stone
57	quartz edge tool/preform
58	quartz edge tool/preform
59	broken felsite edge tool/preform
60	oval core
61	banded felsite biface
62	banded felsite flake
63	banded felsite biface
64	quartz small stemmed point
65	quartz core
66	quartz edge tool/preform
67	green felsite blocky fragment
68	quartz small stemmed point*
69	quartz small stemmed point*
70	quartz edge tool/preform*
71	quartz edge tool/preform*
72	quartz edge tool/preform*
73	quartz small stemmed point*
74	7 quartz edge tools/preforms*

**Artifacts from construction disturbance:** 2 broken adz blanks, felsite edge tool/preform, large porphyritic felsite blade, pecked adz, 2 plummets, polishing stone, porphyritic felsite biface, 2 porphyritic felsite flakes, 17 quartz edge tools/preforms.

<sup>1</sup> Not all artifacts are marked on Figure 2.

<sup>2</sup> Analysis of quartz and felsite edge tools not yet complete.

\* Artifact found redeposited outside of main feature.

had distinctive notches that defined the top of a convex-sided, pointed base (Kremp 1961: Appendix by Fowler). This would be similar to the notched Caddy Park blades if their bases were unfinished.

If the blades, or some of them, are incomplete, it would be in keeping with the assemblage of heavy woodworking tools, which are in varying stages of production. A cluster of ground stone tools in the southern portion of the feature included two almost completely finished adzes, a partially worked gouge, an adz preform and a circular bifacial core or preform. They were lying on their edges so tightly packed that a dental tool could not fit between them (Figure 5). The amount of pecking on these tools ranges from none on the preform, to most of the surface on the only adz with a ground bit. The sweeps of the bits are both straight and convex and one almost complete gouge has a shallow channel running half way down the ventral surface.

Two portions of a roughly shaped adz

preform came out of the original construction disturbance along with a pecked adz, and a stout wedge-shaped adz was found in situ in the northern portion of the feature.

The final specimen of note is a nearly finished, but probably unused gouge (Figure 3). It is fully pecked with no remnant flake scars and has a finely ground bit. Its channel extends from just below the butt end to the midpoint of the gouge. Its cross section is plano-convex, but while the dorsal surface is straight, the ventral side has a pronounced curve, with the butt end rising sharply from the midpoint. Grinding striations on the convex bit run in three different directions and some continue lengthwise down the body of the gouge. Unlike the other woodworking tools, this gouge has a slight knob situated on the dorsal side toward the bit end. A second knob toward the butt end may have been planned but not fully executed. Prominent parallel grooves run from 1 cm above the bit to just past the knob on either side of the



**Figure 3.** Selected Caddy Park artifacts from top: "Whale" gouge, 33cm-long blade, two plummets, atlatl weight, broken whaletail pendant.

dorsal surface. The profile of this gouge—with its grooves simulating a mouth and the knob, typical of gouges, but placed closer to the bit than normal, suggestive of a blowhole—gave rise to the theory that the gouge might be a whale effigy (Figure 4).

Indeed, the gouge's profile does look like a Western conception of a whale and it would make sense to fashion a gouge used to make a coastal dug out or canoe resemble, even if only slightly, the most powerful mammal of the sea. Other whale effigies have been found in New England and the Maritime Provinces of Canada, often in association with Maritime Archaic red ocher graves and cemeteries (Spiess 1991, Moorehead 1922, Tuck 1971). Moorehead (1910 V2:18) contends that “numbers of rude effigies, more or less whale-like in character,”

have been found along coastal Massachusetts and Connecticut. Additional examples are illustrated in Willoughby (1973:50).

Identifying a whale species that the gouge may represent is difficult, if not futile. Whales often found in shallower New England waters include the pilot whale and, prior to the whaling industry, the right whale. Long-finned pilot whales, which due to their stranding tendencies would have been familiar to Native Americans, have a distinctive, bulbous bump on their heads, very unlike the gouge's smoothly sloped “head”. Right whales are known for their peculiar S-shaped mouths. The gouge's “mouth” grooves curve downward at the knob end, but are predominately straight lines. Humpbacks, minkes and grey

whales, now extinct in the Atlantic, have straight mouths and sloping foreheads, but they also have pointed snouts. Although usually found in deeper water, grey whales and minkes are both known to swim into bays and estuaries and humpbacks will swim in shoals (Leatherwood and Reeves 1983). Anthropomorphic and zoomorphic symbolism, rather than realism, is characteristic of most Native



Figure 4. “Whale” gouge profile. Note knob on dorsal surface and groove starting just above the bit.

American art through the years. Native Americans in New England, or elsewhere for that matter, did not make completely accurate representations of humans or animals, and one or more characteristics of the *real* thing may have had to be altered in order to accommodate the necessary parameters for a tool.

The adz cache (Figures 5, 2: Cache A) and the green blade (Figure 2: Cache B, 22) were discovered within particularly high concentrations of ocher and upon removing them from the soil, it was clear that these large tools were more heavily coated in ocher on the exposed side. This suggests that although the ocher stain may, in part, have resulted from leaching after pouches filled with ocher and placed in the feature disintegrated, ocher



**Figure 5.** Adz and quartz cache (Cache A) in situ. The ocher stain surrounding these artifacts was much darker than elsewhere in the feature. (Scale: diameter of cache 25 cm)(Photo: Kevin O'Malley, MDC).

appears to have been deliberately sprinkled on top of some of the artifact concentrations. The delineation of the feature itself clearly indicates that ocher was sprinkled on the ground, perhaps before and certainly after the placement of the artifacts.

Four quartz edge tool and preform caches, which included sixty-six, forty-two, twenty-four and seven artifacts apiece, were found in the feature (Figure 2, Table 1: 33,24,43,41, Caches A-D). The two largest caches were tightly packed and tucked around the adz and green blade caches in a way that suggests they had been in some sort of container such as a bag or tightly drawn pouch (Figure 2: 33,24, Caches A, B). The smallest cache (Figure 2: cache D, 41) was discovered next to what might be a stone polishing kit, which consisted of two flat ovoid-shaped pieces of stone, possibly used to polish the adz tips, and a fine polishing tool (Figure 2: 46,47,56). Two additional fine polishing tools found in the feature are the type that might be expected to produce the smooth finish of the atlatl.

A symmetrically winged atlatl weight, often referred to as a whaletail atlatl (Figure 3), was

found on the western edge of the feature. It is made from a dark slate, with light-colored marbling. Incised, parallel striations run vertically and diagonally across the wings. Similar striations exist on a broken whaletail pendant from the site (Figure 3). The striations on the pendant are more random, however, and appear only on one side. They may be the result of use-wear since impressions in the stone, which might have resulted from cordage or leather strips used to suspend the pendant, are visible around the notched areas. Of possible significance for the assemblage as a whole, is the fact that this was the

only artifact that may have been broken at the time the feature was created.

Several Small Stemmed Points (Figure 6) also came out of the original shovel disturbance, shallow pockets of ocher deposited around the main feature by the earthmoving equipment, and a small cache of edge tools on the western edge of the feature (Figure 2: Cache C).

### Maritime Associations

The composition of the artifact assemblage, coupled with the estuary/bay location of the site, strongly suggests that the tools comprised a tool kit that was specifically adapted to maritime resources, and it may be an extreme form of specialization at that. The large woodworking tools and net sinkers point toward fishing and boat travel. Archaeological and historic evidence confirm that Native Americans often fished for large, sometimes dangerous prey, both near land and from canoes. Large bottom dwelling fish that prefer deeper waters, such as spiny dogfish, have been recovered in Woodland contexts from the Boston Harbor

Islands by Barbara Luedtke (1980:66). These species may have been caught with lines and hooks with the use of line sinkers shaped like those from Caddy Park (Robinson 1985:59). There are also historical accounts of Native Americans netting sturgeon, which prefer shallow estuary environments during certain seasons (Luedtke 1980:66).

On the Hudson River, Funk identified specialized blades

that may have been used to help penetrate the sturgeon's thick plates (Funk 1976). The Caddy Park blades, however, are much larger and better made than the petelas blades of New York. Finally, swordfish, are known to have been hunted from canoes by Maritime Archaic cultures along coastal New England and Canada with the use of toggle-headed harpoons (Strauss 1987).

The association of this feature with whales is also strong: the whale effigy gouge, the whaletail atlatl (which, commonly attributed to spear throwing, may also have been associated with harpooning) and the whaletail pendant. Given this ensemble of artifacts and their ecological context, the Caddy Park blades may also relate to whales; they may have been a specialized flensing kit, used to process the blubber of whales—either in reality or ritually.

There is currently no definitive evidence that Native Americans hunted whales in the open ocean during prehistoric times. A 1605 account by James Rosier of Native Americans hunting whales from open boats along the New England coast may record behavior already influenced by Basque whalers (Little 1981:59). Of course it is impossible to completely rule out the possibility that Native Americans hunted whales in shallow water prior to



Figure 6. Caddy Park projectile points. The three points on the far left were found *in situ* with Cache C.

the coming of Europeans, before Native Americans were decimated by disease and when whales were substantially more plentiful than they are today (Little 1981:51). Right whales, for example, swim near to shore and at the ocean surface. They are relatively slow moving and float when killed. Although there are only about 300 in the North Atlantic now, they may have exceeded 100,000 before commercial whaling decimated the population (Leatherwood and Reeves 1983). Since pilot whales are easily herded and driven to shore by men in boats, this type of hunting may also have taken place. In either case, beached whales, which either stranded themselves, or drifted to shore after death, were certainly used by prehistoric cultures.

Historic accounts of Native American drift whale processing begin with the first explorers and settlers. *Mourt's Relation* describes the Pilgrims' encounter with Native Americans butchering beached "grampus", or pilot whales and cutting them into strips about 115 cm long and 20–31 cm wide (Heath 1963 [1622]: 32-33). So valuable were beached whales to the subsistence of Native Americans on Nantucket in early historic times, that although they sold their land to Europeans, Native Americans retained the right to drift whales along stretches of beach where strandings were

known to frequently occur (Little and Andrews 1982).

For still unknown reasons, pilot whales tend to beach themselves in large groups on Cape Cod, especially near Wellfleet, after winter storms (Aqualog 1997). They are occasionally found stranded on other parts of the New England coast, as are larger whales that die and drift to shore. In fact, a baby minke whale drifted to shore on Wollaston Beach in 1986 (Scheible 1986). Further research on our part is needed to better evaluate which species might have found their way into Boston's inner harbor, but whales were successfully hunted within the harbor by historic-period shore-based whalers (Vickers 1997:95).

Archaeologically, pilot whale bones have been recovered in Middle and Late Woodland contexts on Nantucket, Martha's Vineyard, Wellfleet, Brewster, Truro and Chatham, MA (Bradley, Spiess and Early 1998:8) and sperm whale vertebrae came from a Woodland context at Throngs Neck, NY (Schaper and Brennan 2000:13).

Despite this evidence for Native American whale use, the relative thinness of the largest blade and its quartz flaw may have made it unpractical for large-scale butchering although the smaller notched blades may have been hafted as large knives. Perhaps one of the greatest arguments against the flensing kit theory is that if these were specialized whale butchering tools, they should be found in great numbers on the Cape and Islands, where strandings are frequent, but have not yet been identified in these areas. But, then again is the Indian Neck Ossuary really the only feature of its kind north of the Delmarva Peninsula?

#### **Conjecture about Purpose**

The ultimate goal of archaeology is to interpret the behavior that was responsible for creating the patterning and relationship of artifacts encountered

in the ground. While research is still in its infancy there are a few things that can be said with reasonable certainty at this time:

- The site is indeed rare, if not unique within the Commonwealth and perhaps all of New England (at least as reported).
- The feature represents a single event or activity in time and space as opposed to an activity or series of activities that occurred over time.
- Some artifacts were intentionally and methodically placed on the ground. Others appear to have been within some type of pouch or container, and an alignment of six net sinkers suggests that a fishing net was placed on the ground.
- The event that created the feature had clear ritualistic and ceremonial associations as all of the artifacts were covered in red ocher.
- Several of the artifacts are highly unusual: the 33 cm blade is one of the largest found in New England; even the three smaller blades (15.5–19.8 cm) are large for the area; the whale effigy gouge may be unique in form. Taken together with the whaletail atlatl weight and whaletail pendant, the assemblage clearly points to a maritime link.

We currently have three working hypotheses about what the feature that comprises the Caddy Park site represents and how and why it was formed.

#### **Burial**

This feature has many similarities to the red paint burials of Maine and Massachusetts despite the fact that it lacks bones or organic matter of any kind. Red ocher, a common symbol of death and rebirth, winged atlatl weights, woodworking tools, net sinkers, winged pendants and large (although usually stemmed) blades are often associated with these graves, as are whale effigies. Additionally, some red paint cemeteries have a few "graves" that

seem not to have held bodies, or where the bones have completely disintegrated.

The Caddy Park feature completely lacked the normal indices of a human interment: there were no characteristic rich organic soil from a decomposed body, and no calcined bone (not even a few flecks that could have been from a secondary interment from a cremation that occurred elsewhere). Thus, it is possible there never was a body, and that the feature was a cenotaph created to commemorate the death of a loved one whose body was never recovered, and the tools and implements that served him in life accompanied him in death.

The symbolism of ocher and blood are especially strong in the case of burials, particularly in the Maritime Archaic of northern New England. Ocher represents the blood of the placenta. In death one returns to the womb: life comes full cycle, just like the seasons.

#### *Cache for retrieval*

Alternatively people may have placed the artifacts in a pit for safekeeping, with the intent of returning to retrieve them. Large woodworking tools and specialized fishing gear may have been useful during seasonal trips to the coast, but they were of little value on the frozen streams and ponds near their interior winter camps. Similarly, large blades were not well suited to processing the terrestrial fare available throughout most of the year's seasonal rounds. Why would people carry fragile and largely useless implements around with them when they knew that they would be returning to the same summer camp that their families had frequented for years? Returning to camp at the prescribed time, the tools could be retrieved and the hunt for whales and other marine mammals could resume. So outfitted, they were prepared to receive the gift of *Maushop*, the legendary god of whales and whaling, who was believed to be responsible for providing stranded whales (see below). The

careful placement and burial of the tools may be an indication that people planned to return. But, if so, why were the tools buried so deeply and what was the red ocher meant to symbolize? Was it a protective measure or a warning? Why were they not retrieved? Had the people responsible for the feature died? Had they changed their residence patterns?

#### *Offering*

Finally, this feature may have been part of a ritual or votive offering. Although we will never know to whom or for what this offering was made, there is strong local tradition that points to Maushop. Maushop was related to the pan-Algonquian giant Gluskap who figures prominently in the legends of Native Americans of northern New England; Maushop was his southern manifestation (Simmons 1986:172). Maushop was a particularly prominent god on Nantucket and Martha's Vineyard (today the Wampanoag Tribe of Gayhead Aquinnah feature him as their logo) and he is accredited with forming much of coastal southern New England, including Quincy Bay (John Peters, Jr.: personal communication). The recurring theme about Maushop is that he was a benevolent giant who drove whales onto the shore as food for his followers.

That Maushop was linked to the gift of such a vital resource is a compelling argument for his importance in the myth and legend of Native Americans and for his association with this site. Maushop was seen as the provider of a valuable food source that required virtually no energy expenditure to obtain. This on-shore fishery was also entirely safe, as it did not require entering canoes and dugouts for the perils of open water (pelagic) whaling.

In the case of an offering, the whale effigy, whaletail pendant, winged atlatl weight and giant tools may all have been associated with giving



thanks directly to the supplier of whale meat—Maushop—or an ancestral form of him. Or perhaps the offering was given to ensure a bountiful upcoming season, or for a specific event. Performing ceremonies and pow-pows before a hunt was commonplace at the time of European arrival. Those ceremonies did not develop suddenly. Rather, they were the culmination of hundreds and probably thousands of years of practice.

In an offering ceremony, the items placed in the feature would not be meant for retrieval, but to be given away. In such an important ceremony it would be essential that quality items be given. Items had to have a cost value, not in monetary terms, but perhaps in terms of energy cost, such as the time expended in making particularly fine blades.

In this case, the red ocher—symbolizing the blood of a butchered whale—would be appropriate.

### Conclusion

In conclusion, Caddy Park is a tantalizing snapshot of the past. There are still many questions. For example, how old is the feature? The Small Stemmed Points give a broad relative date of ca. 6,000 to 1,700 B.P. (i.e., Late Archaic through Early Woodland) and the lack of organics precludes the ability to attain an absolute date. If this feature exists on Quincy Bay, can we assume that similar features exist, undiscovered, in similar ecological settings? How does this site relate to general cultural patterns in the coastal northeast during prehistoric times?

We do know that this feature was a single event and that there was intent and meaning to the act of digging the pit and choosing and preparing the artifacts for burial. In addition, it is clear that many of the tools were either made specifically for burial within the feature, or were cached in the process of being made, and that some artifacts had

originally been in bags, baskets or other containers, or were otherwise lashed together. Ocher was deliberately sprinkled over the artifacts, and for some reason, the artifacts were buried and never retrieved.

We believe there are at least two important lessons to be learned from the Caddy Park site. First, the mere existence of the feature clearly demonstrates the resilience of the archaeological record, for even in severely disturbed areas, significant archaeological features may survive. Caddy Park illustrates the importance of having a cultural resource management program for public lands and personnel who can be relied upon to comply with that program. Although the archaeological testing missed the feature by a meter, without the diligence of the resident engineer and construction crew, this site would never have been professionally excavated or reported on here. How many other sites/features of its type have already been lost? Second, this mysterious feature illustrates how very little we really know about the past and how fragile the knowledge we have really is. Just when we were beginning to think we understood things along comes Caddy Park: burial, cenotaph, cache, or offering? Hopefully our continued analysis of the artifacts and their relationship to one another will bring us closer to an answer.

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## INTERPRETING DIVERSE MARINE SHELL DEPOSITS OF THE WOODLAND PERIOD IN SOUTHERN NEW ENGLAND: INTERRELATIONSHIPS AMONG SUBSISTENCE, SYMBOLISM, AND CEREMONIALISM

Jordan E. Kerber

### Abstract

*In this paper, I intend to expand our notions of "shell middens" and the ways in which diversity is expressed in marine shell deposits by exploring less obvious behavioral processes that might account for accumulation of shellfish remains at Woodland period sites in southern New England. In so doing, I raise many questions and generate much speculation, which I hope will warrant further consideration.*

### Introduction

In this paper, I intend to expand our notions of marine shell deposits and the ways in which diversity is expressed in these features at Woodland period sites from southern New England. By exploring less obvious behavioral processes that might account for accumulation of shellfish remains, I raise many questions and generate much speculation, which I hope will warrant further consideration. I conclude by presenting data from the Lambert Farm site in Rhode Island. While this information does not necessarily prove my speculation, it provides the inspiration for much of the theoretical discussion in this paper.

Though the topic of shell midden diversity has been discussed in the literature by Barber (1983), Ceci, (1984), and Lightfoot (1985), among others, I will address the larger issue of diversity

within the context of prehistoric human use of marine shellfish, specifically molluscs. In this conceptual framework, I offer an alternative, less traditional interpretation. I argue that prehistoric shell deposits and the use of shellfish may have reflected more than just subsistence economies. It is conceivable that in some instances, perhaps more than we might assume, the shells themselves possessed symbolic meaning and ceremonial significance. I should state at the outset, of course, that subsistence, symbolism, and ceremonialism are not necessarily unrelated, nor are they mutually exclusive. The same shellfish could have been collected for both consumption and ideological purposes.

### Shellfish Use and Shell Deposits

Prehistoric human use of marine shellfish in southern New England has been seen almost exclusively within the context of subsistence. It is no secret that past populations usually collected molluscs to consume the extracted meat and discarded the shells because they could not be eaten. But were shellfish and shells utilized in ways other than human consumption and food refuse? Of course, for the Contact period in the Northeast, wampum comes immediately to mind, though shellfish meat in the quahog and whelk shells, from which the shell beads were fashioned, may have been eaten. Shellfish meat may have been used as bait on hooks or in nets to attract fish (Claassen 1991a: 253). And large shells could have been used as hoes to cultivate Woodland period gardens. We

may be hard pressed to think of other examples. As Harold Rollins, Daniel Sandweiss, and Judith Rollins (1990: 474) maintain in their co-authored article, molluscs throughout the New World, Oceania, and elsewhere have a "passive use," in addition to their subsistence use. They (*ibid*) state that marine shells functioned as important ritual symbols, as items of ascribed value, or both. Is this true for southern New England during the Woodland period? I suspect so and will elaborate shortly.

Evidence for use of shellfish is abundant along the shores of southern New England, as well as many other coastlines around the world. The most conspicuous evidence, of course, is the shellfish remains, which are often discovered in dense deposits, so-called shell middens, that may contain other types of cultural materials. In addition to their high visibility, dense deposits of molluscs are often a treasure trove of data and objects as the calcium carbonate in the shells tends to contribute to the preservation of bone, charcoal, and nut and seed remains, among other organics that may have been left in these features. Dense shell deposits are notorious, however, for often containing complex microstratigraphy and evidence of multiple episodes of use, thereby posing difficulties in excavation and interpretation (Dincauze 1996; Shaw 1994; Stein 1992).

Southern New England sites containing shell-rich deposits have had a relatively long history of investigation, spanning over 150 years, initiated by geologists and naturalists and later continued by archaeologists (Christenson 1985). In 1867, Jeffries Wyman introduced the term "shell heap" into the literature on New England when he wrote on the dense shellfish remains of Salisbury, Massachusetts. Soon use of the synonymous terms "shell heap," "shell midden," and "kitchen midden" became commonplace. The word "midden," according to Julie Stein (1992: 6), has its roots in

the Scandinavian languages, meaning an accumulation of refuse about a dwelling *per se*.

While all shell middens are, by definition, dense shell deposits, it does not follow that all dense shell deposits are necessarily shell middens, even if they contain discarded food remains. Clearly, the vast majority of shell-rich features contain the remains of consumed meals of molluscs and other food. But calling all such deposits shell middens simply because they consist of dense shellfish remains is misleading and makes it difficult to interpret them in ways other than just subsistence. For this reason, some archaeologists (Stein 1992; Claassen 1991a) prefer the term "shell-bearing site," instead of "shell midden" to refer to a site containing shell deposits. I do not propose at this time that the term "shell midden" be replaced, but rather that we expand our notions of so-called shell middens in more complex ways. In this paper I consciously attempt to use the more inclusive terms "shell deposit" and "shell feature" to downplay the primarily subsistence-related connotations associated with the term "shell midden."

Since we usually see shell deposits in economic terms, particularly as food refuse, we have for many years analyzed the archaeological remains of molluscs in order to reconstruct subsistence and related topics, including diet and nutrition, seasonality, settlement, population size, and environmental change. Shellfish and "shell middens" have been at the center of several debates among northeastern coastal archaeologists, for instance: Were molluscs a supplement versus a staple (or seasonal staple [Claassen 1991a: 269]) to prehistoric diets? Were changes in the distribution of shellfish species in features a result of changes in technology, cultural preferences, environmental conditions, taboos, and/or other factors? How is it possible to obtain representative samples from "shell middens?" And how accurate are shell-

growth studies for identifying season(s) of death? Despite the disagreements in these debates, the "message in the midden" is still heard loud and clear: SUBSISTENCE.

### Diversity

Although shell deposits tend to be interpreted primarily as food refuse, and the dense ones are treated as a single type of site or feature (i.e., "shell midden"), archaeologists still recognize the considerable diversity among and often within these remains (Barber 1983; Ceci 1984; Lightfoot 1985). The fact that no two shell features are the same comes as no surprise. Why would we expect them to be? Variability among these deposits is found in their measurable attributes, a few of which are size, shape, and depth, as with any feature, and density of shells and frequency of shellfish species. They range from thin scatters of fragmented shells of one species to deep deposits (exceeding one meter) containing thousands of shells and the remains of numerous shellfish species, in addition to artifacts and other non-molluscan materials. Some were used only once, some only one season, and others multiple seasons and even years. Many, if not most, were situated adjacent to paleoshorelines (some of these deposits are now submerged by rising sea levels), while others were located farther from their contemporaneous coasts. Some appear as mounds, situated above or below ground, others are shallow pits. Their functions are often interpreted variously as special-purpose processing camps, bulk procurement locations, "dinnertime" camps, seasonal, short-term and long-term residential bases, and occasionally shell-bead production loci (Lightfoot and Cerrato 1989: 41).

Diversity may be seen in other areas, and I am unable here to elaborate on all. Nor is it my intention in this paper to construct a typology of shell deposits. But there may be another way, often

overlooked, in which variability exists among these features. Although difficult to prove, it is conceivable that some shell deposits contain the remains of molluscs that were more than just discarded food refuse (excluding the use of shell for wampum). I want to raise the possibility that in certain contexts shells, individually and/or collectively, had important symbolic meaning to the people who used them for reasons other than, or in addition to, their associated meat content. What are these contexts? I have been suspicious, over the years, of human and animal burials associated with shellfish remains, and I suspect that ideology and ceremonialism were as much a part of these deposits as subsistence was. I realize that the separation of ideology and ceremonialism from subsistence, as traditional as it is for archaeologists, was probably far less rigid among Native Americans. Nevertheless, the literature is full of references to burials of humans and dogs and occasionally non-domesticated animals within and adjacent to shell-rich deposits, and I know a number of you here have worked on such features. What is lacking in the literature, however, are discussions of the potential ideological aspect of these shell-burial associations and their relevance as a measure of diversity for both shell deposits and shellfish use. There is a notable exception, which I will discuss shortly.

It is important to make a distinction here. I am not attempting to understand why burials are preserved in deposits containing shellfish remains. (Clearly, the alkaline nature of the shells, as previously mentioned, is the cause of organic preservation bias of these features.) Nor am I claiming that shell deposits were the preferred or most common method of mortuary treatment in the region. Similarly, I am not arguing that burials are highly associated with shell deposits or vice versa. But rather I am attempting to understand why burials occur at all in features that also hold shells,

regardless of how many burials were interred, or are still preserved, outside of shell contexts. In other words, I am particularly curious of the myriad reasons why burials were put within deposits also containing shellfish remains, and, conversely, why shells individually and/or collectively were placed in burials. I also should state clearly that shell-burial associations to which I refer consist of at least three variations: burials occurring within dense accumulations of shells; burials situated "immediately," "directly," or "just below" (rarely reported as above) such shell concentrations; and "isolated" shells placed next to interred skeletal remains.

Whether shells were intentionally placed surrounding burials or whether burials were deliberately put within previously existing deposits of molluscs, shell-burial associations raise numerous questions. For instance, was it significant to prehistoric peoples that shells covered or were placed near specific burials and similarly that other burials were placed intrusively within deposits of molluscs? If so, why? Did the whiteness of the shells represent their value as mortuary items? Were any of these shells the remains of ritual feasting in connection to burying the dead? In short, were these features more than just "shell middens?" We can ask other relevant questions as well. I do not presume, however, that all these questions can be answered definitively at present or in the future. But I am convinced that such questions and others ought to be asked of shell-burial associations and that their answers attempted, as speculative as they may be. If not, we will continue to interpret diversity of both shellfish use and shell deposits in limited ways.

In the remainder of this paper I present a brief case study in which I raise the possibility that shells from two features at Lambert Farm, a Woodland site in southern New England, possessed symbolic importance as raw materials for animal

burials. In this situation and perhaps many others, the use of shellfish may have been as centrally related to spirituality and ceremonialism as it was to subsistence.

### Case Study

Lambert Farm (RI-269) dates predominantly to the Late Woodland period and is located in Warwick, Rhode Island, approximately one mile west of Narragansett Bay (Figure 1). Intensive archaeological research, which I co-directed with Alan Leveillee of the Public Archaeology Laboratory, Inc. between 1988 and 1990, resulted in the completion of 523 50-X-50-cm shovel test pits, most of which were placed at 2.5-m intervals, and 122 excavation units (mostly 1 x 1 m) within a 1.5-acre area (Figure 2), distinguishing Lambert Farm as one of the most thoroughly hand-tested sites in New England. Fieldwork revealed 49 features, most containing some amount of shells, varying greatly in both horizontal and vertical distributions. Several deposits consisted entirely of one or two species of molluscs, while others had six or more. By far, most of the shell features at Lambert Farm contained at least discarded food remains in the form of both animals (invertebrates and vertebrates) and non-domesticated plants. Two features (designated numbers 2 and 22), however, were remarkably different from the rest because they were the largest, each holding more than one thousand pounds of shells, and they contained a total of three burials of domesticated dog (*Canis familiaris*). It is these two features that provide insight into an alternative interpretation of shellfish use and shell deposits.

Time does not permit me to provide all the intricate details of both features, which are discussed elsewhere (Kerber 1997a, 1997b, 1994; Kerber et al. 1989), so I will summarize briefly

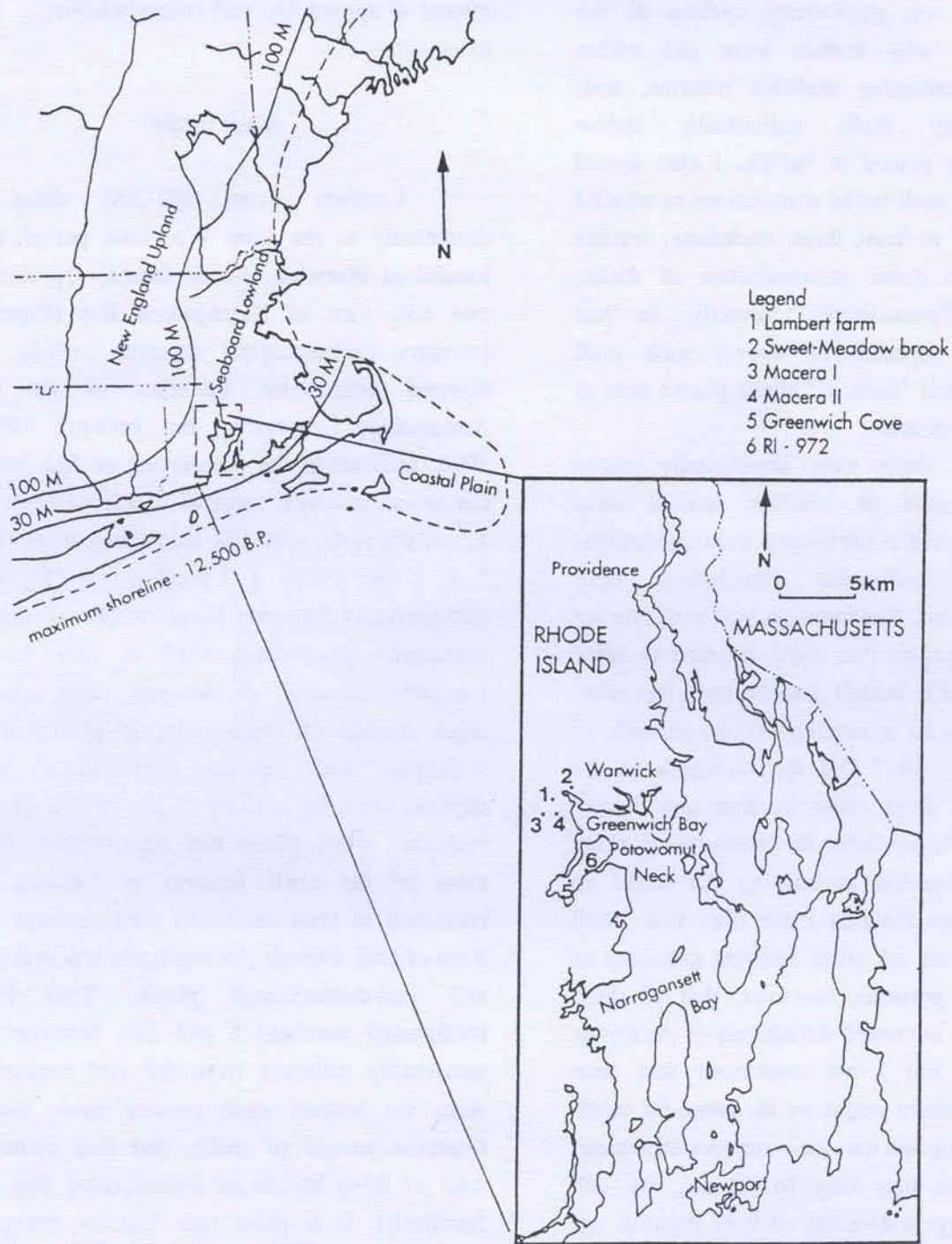


Figure 1. Location of Lambert Farm and other archaeological sites discussed in the text (from Kerber 1997a:8).

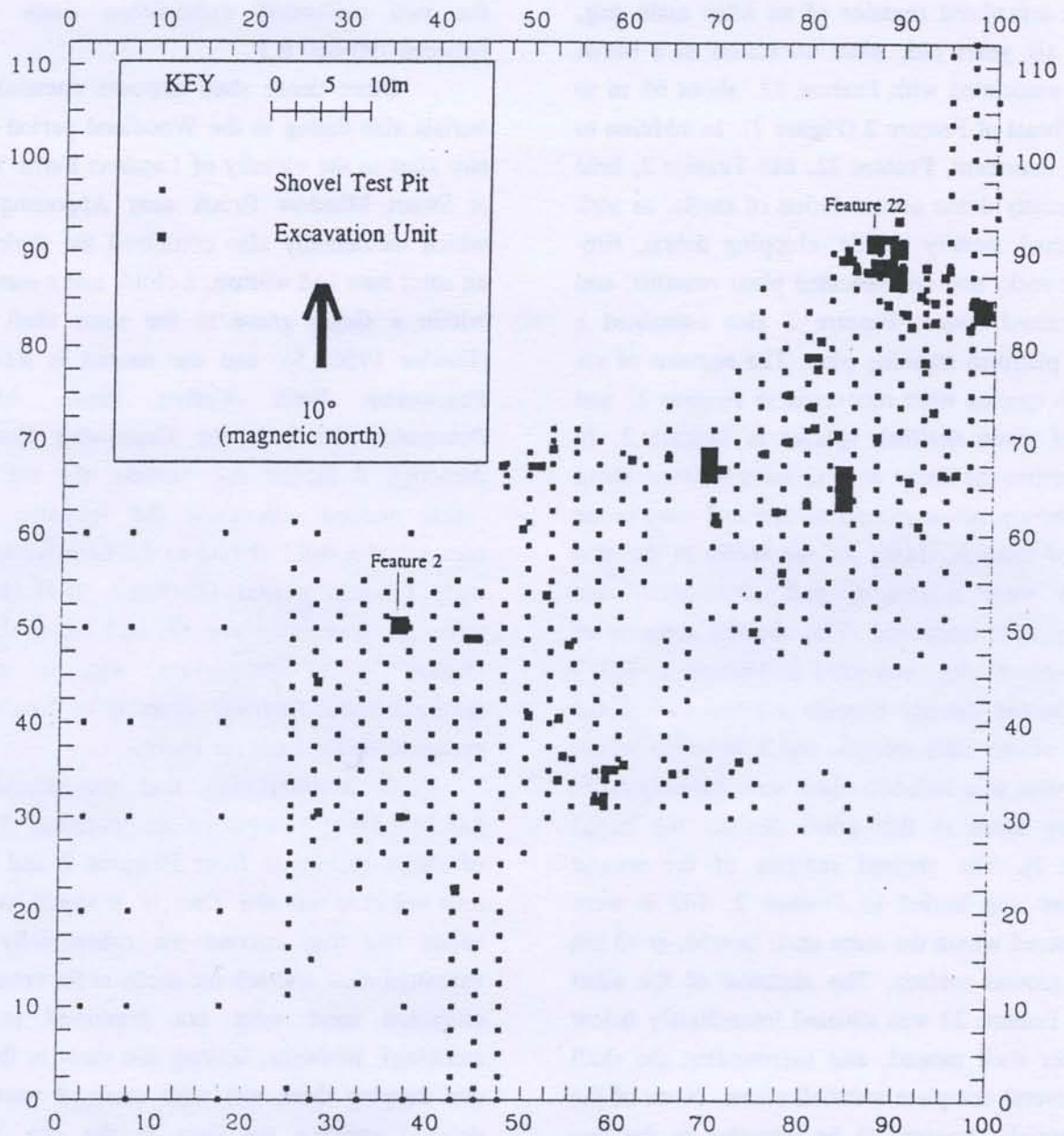


Figure 2. Location of Features 2 and 22, and completed sample units at Lambert Farm (from Kerber 1999:63).



much of the pertinent information. The partially crushed, articulated remains of two immature dogs approximately four months old were discovered in separate burial deposits associated with Feature 2, and the articulated remains of an adult male dog, five or six years old, were unearthed in a burial deposit associated with Feature 22, about 65 m to the northeast of Feature 2 (Figure 2). In addition to the dog interment, Feature 22, like Feature 2, held an extremely dense accumulation of shells, as well as charcoal, pottery sherds, chipping debris, fire-cracked rock, non-domesticated plant remains, and disarticulated bones; Feature 2 also contained a steatite platform smoking pipe. The remains of six shellfish species were recovered in Feature 22 and those of seven shellfish species in Feature 2. In both features the shells were situated between about 25 and 85 cm below ground surface and were in the shape of mounds. Many of the shells in the two features were unbroken, and occasionally the bivalves were unopened. The skeletal remains of one immature dog recovered in Feature 2, EU 3 were situated directly beneath a stone slab at the bottom of the shell mound, and a knobbed whelk and a valve of a softshell clam were the only other mortuary items in this grave besides the burial (Figure 3). The skeletal remains of the second immature dog buried in Feature 2, EU 8 were encountered within the same shell mound, at 73 cm below ground surface. The skeleton of the adult dog in Feature 22 was situated immediately below the other shell mound, and surrounding the skull were several complete softshell clams. None of the three burials appeared to be intrusive in the two shell features. An uncorrected radiocarbon sample of quahog shell at the bottom of the mound in Feature 2 dates to 870 + 80 B.P. (Beta 27937) (Kerber et al. 1989:168), while a corrected AMS radiocarbon sample of rib bone from the dog burial in Feature 22 dates to 810 + 45 B.P. (AA-11784) (Kerber 1997a: 32). The latter is the only known

radiocarbon date of a prehistoric dog in Rhode Island. Using the calibration computer program CALIB REV 3.0.3 (Stuiver and Reimer 1993a, 1993b), which entails a 95% level of confidence, the two calibrated radiocarbon dates overlap between 790-660 B.P.

Other dense shell deposits containing dog burials also dating to the Woodland period exist at two sites in the vicinity of Lambert Farm: the first is Sweet Meadow Brook near Apponaug Cove, which incidentally also contained the skeletons of an adult man and woman, a child, and a mature dog within a single grave in the same shell feature (Fowler 1956: 5); and the second is RI-972 on Potowomut Neck (Kerber 1984). Also on Potowomut Neck is the Greenwich Cove site. Although it lacked dog burials, the site's large "shell midden" contained the intrusive skeletal remains of a child, dating to the Late Woodland or early Contact period (Bernstein 1993:160). All three of these sites are situated along the coast (Figure 1). In comparison, what is strikingly different about Lambert Farm is its location at a greater distance from the shore.

It is interesting that the occupants of Lambert Farm transported the enormous quantities of shells recovered from Features 2 and 22 one mile uphill to this site. Clearly, it would have been easier had they carried the substantially lighter extracted meat and left the shells at the coast. If the extracted meat were not preserved (e.g., by smoking), however, leaving the meat in the shells and keeping them wet with seaweed would have delayed spoiling for days at the site. Possible reasons for not preserving the extracted meat at the shore include planned consumption within a few days, availability of firewood, amount of effort, taste (including "wetness") preferences, and/or use of the shells at the site. The discovery of the three dog burials within and below both shell mounds may help to explain why such large amounts of

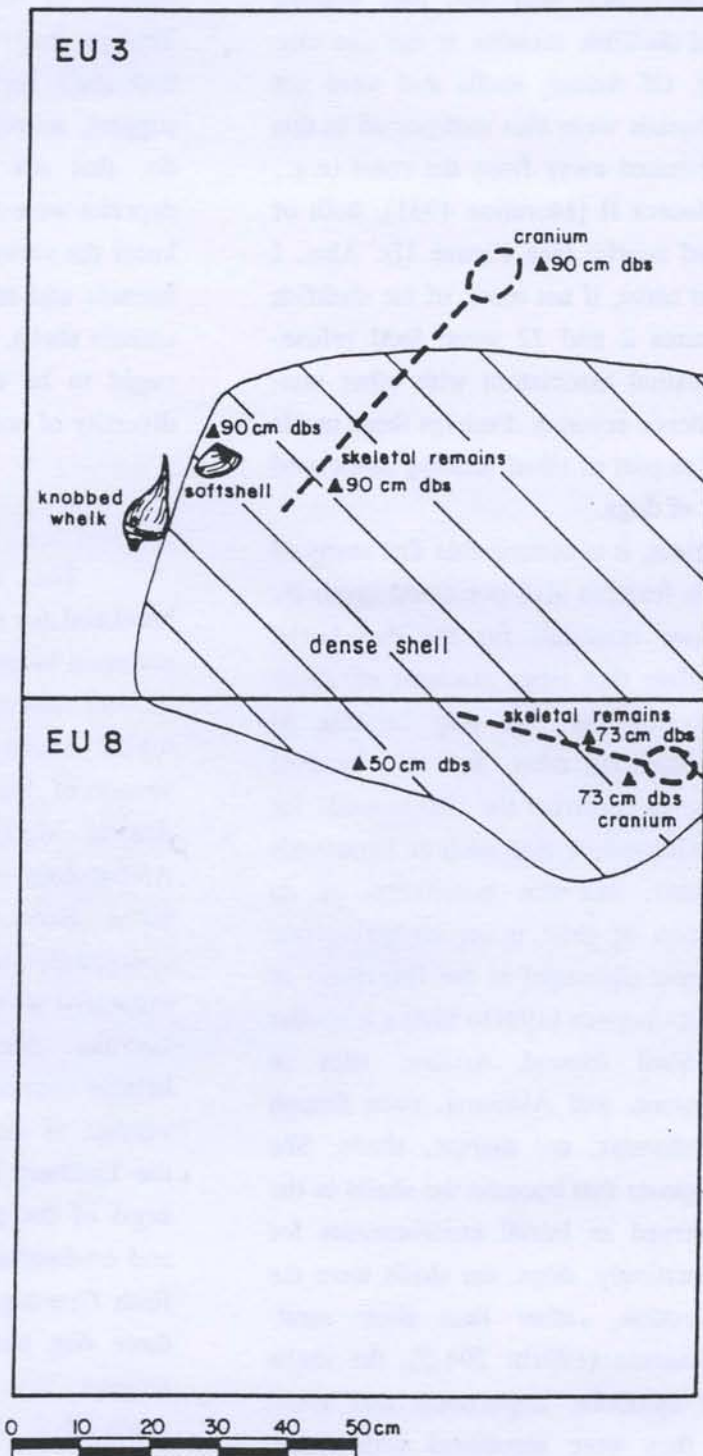


Figure 3. Plan view of two dog burials and other remains recovered from Feature 2 at Lambert Farm (from Kerber et al. 1989:170).

shells were brought to Lambert Farm. Indeed, it may be no coincidence that the two densest concentrations of shellfish remains at the site also held dog burials. Of course, shells that were not associated with burials were also transported to this site and others situated away from the coast (e.g., Macera I and Macera II [Morenon 1981], both of which are located nearby [see Figure 1]). Also, I readily admit that some, if not most, of the shellfish remains in Features 2 and 22 were food refuse, given their contextual association with other non-molluscan subsistence remains. Perhaps these meals were even eaten as part of ritual feasting associated with the burying of dogs.

Nevertheless, it is conceivable that many of the shells in both features also possessed symbolic importance as raw materials for the two burial mounds. I speculate that large amounts of shells were brought to the site, not only because of consumption of shellfish meat, but also because they were needed to construct the two mounds for the dog burials. Granted, testing such an hypothesis would be difficult, but the possibility of an ideological function of shell is an intriguing one that few of us have discussed in the literature. In particular, Cheryl Claassen (1991b) makes a similar argument for Shell Mound Archaic sites in Kentucky, Tennessee, and Alabama, even though they contain freshwater, not marine, shells. She (1991b: 289) proposes that because the shells in the large mounds served as burial environments for people and, interestingly, dogs, the shells were the objects of collection, rather than their meat. According to Claassen (1991b: 294-5), the shells themselves had symbolic importance and ritual significance as they were associated with value, procreation, and death.

### Conclusion

In conclusion, what I initially thought to be two typical "shell middens" that happened to

contain three dog burials at Lambert Farm, I now believe to be much more complex than that. Though they contained discarded food refuse in both shell- and non-shell forms, Features 2 and 22 suggest, as perhaps other shell-burial associations do, that not all activities represented at shell deposits were limited to subsistence. We may never know the various reasons why prehistoric burials of humans and animals exist within features that also contain shells, but the fact that they occasionally do ought to be considered in our interpretations of diversity of both shellfish use and shell deposits.

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## ASPECTS OF ATTRIBUTING HUMAN USE TO UNWORKED QUARTZ: THE QUARTZ CRYSTALS FROM MAGUNCO PRAYING TOWN, MASSACHUSETTS

John Paul Murphy

I worked with Professor Barbara Luedtke as part of my thesis work at the University of Massachusetts, Boston. The objective of the thesis was to assess the significance of crystal and crystalline quartz material found at the site of Magunco III on Magunco Hill in Ashland, Massachusetts.

The historical Magunco, founded in 1670, was the last of John Eliot's seven original "Praying Indian" Towns. There was a great deal of circumstantial evidence suggesting that the site in Ashland was the historical Magunco. At the core of the site was an English-style foundation, approximately 5 by 5 meters. The building over this foundation would have been substantial enough to be a meetinghouse of the late 17th century. The material remains recovered from the site were typical of what would be found at a poor English site of the late 17th to early 18th century, with some subtle exceptions (Brown and Priddy 2000). Among the artifacts, these exceptions included lithic tools and a number of gunflints that had been re-worked by skilled stone knappers.

Found among the colonial items at Magunco were unusual quartz stones, some clear, some smoky. Some had been worked; others were unworked but striking in appearance. The worked pieces were not tools, at least not in an industrial sense. I hoped that a detailed analysis of the quartz material could both help clarify the Native American presence and perhaps suggest something about the beliefs of the people who used the foundation.

Before any interpretation of the material could be attempted, it was necessary to determine if the unworked stones were cultural, that is: Were the unworked pieces manuports, or only part of the background geology? Manuports are "...items which were transported to sites as raw materials, but which were not themselves altered for use as tools" (Hoffman, 1991: 76). Quartz crystals have been found at numerous Native American sites around New England (see, for example, Fowler 1975; Hoffman 1992). If these quartz pieces were similar to those found in known contexts, perhaps they were artifacts. However, as the literature warns, "Great caution must be observed in assigning odd rocks found at sites to this class (manuports), since it is often impossible to tell whether they have been transported to the site by human or other means." (Hoffman 1991: 76).

### Determining Human Agency

Stones can show that they are artifactual in several ways. Lithic material that has been worked into a useable tool is the most obvious way to determine human activity. However, this industrial emphasis (Kences 1990) can cause archaeologists to overlook lithics that have been used for spiritual purposes.

For an unworked stone to be considered cultural, it typically has to be recovered from a context, such as a grave, that unequivocally shows human use. This difficulty may cause manuports in other contexts to be overlooked, as "spiritual tools" may only be recognized when found in "spiritual" contexts. Writing about crystal quartz manuports in the Southwest and Mesoamerica,

Brady and Prufer noted that "The fact that the pieces are both small and unmodified raises the possibility that crystals may occur more frequently in archaeological contexts, but are simply neither recognized as artifactual nor even reported..." (1999: 137).

Even if it is not a tool, a lithic that has been worked into a shape demonstrates human agency. Further, an unworked stone reveals itself to be a manuport if it satisfied two conditions:

1. It is a type of material that could not have formed geologically at the local site;
2. It is possible to eliminate non-human agencies as the cause for its deposition at the site.

### **The Quartz Material**

The term "quartz" covers such a wide variety of forms that the archaeologist would be well advised to explicitly state the type of quartz under examination. This analysis focuses on two specific forms: Quartz crystals and smoky quartz. Quartz crystals need specific conditions to grow. Crystals need both open space and a vein quartz source. During the growth process, the source material leaches out of the rock, growing into a void such as in a cave or rock fissure. In addition to being a potential source of crystals, these places are often seen as places of spiritual power (Brady and Prufer 1999; Smith 1963).

### **Crystal vs. Crystalline**

A true crystal is "...a periodic repetition of some basic group of atoms, the group being repeated at equal intervals throughout the volume of the crystal, like squares on a checkerboard or the hexagonal cells of a honeycomb." (Westinghouse 1965: xii). A true crystal grows from a liquid source. While the crystal pattern varies from mineral to mineral, it is uniform for a given mineral. For quartz, it "... occurs in a

variety of forms, including large, free standing crystals often found lining cavities, the veins of milky quartz that cut through other rocks, and the tiny irregularly shaped grains that are components of many rocks, including chert... The familiar quartz crystal, shaped like a six-sided needle topped with a pyramid, is the largest and most perfect form. It is often described as euhedral, referring to its well-formed crystal faces..." (Luedtke 1992: 8).

There is a distinct geological difference between a true crystal and crystalline material. They form under differing conditions, and there is also a subtle difference in appearance. A true crystal is grown; this growth process forms distinct planar sides. Crystalline material may be clear, but it will not have the six sides formed by the growth process. A crystalline piece can appear superficially similar to a partial crystal. However, a true crystal can be positively identified by its parallel lines. The true crystal face, because it was grown, will have parallel lines of growth while the crystalline material, under magnification, will have wavy lines across the cleavage plane.

A number of true crystals were recovered from the Magunco III site. These crystals could not have formed in the immediate vicinity of the site. In central Massachusetts, they would have most likely formed in a vein of quartz within other igneous rock. Geologists with local knowledge stated that crystals could probably have been found within a few miles of Magunco Hill (Young and Cahoon 1999). USGS maps show a quarry south and west of Ashland State Park, less than two miles from Magunco Hill. Even before the modern quarrying activity, it is likely there would have been isolated pockets of quartz available to the Native Americans. These pockets would most likely form where a void had occurred in an intrusive vein of quartz. Such veins can often be seen where rocky hills have been cut through for

highways. However, to demonstrate a human connection, it was still necessary to eliminate geological movement as the agency that deposited the crystals at the site of the foundation at Magunco III.

Professor Luedtke recommended microscopic examination of all quartz crystal material from the site to assess edge wear. It is possible, by examining the wear patterns on a crystal's edges, to determine if a crystal was transported geologically. This is because geologic activity, such as movement within a glacial till or being transported by a stream, would dull the edges of a crystal. By contrast, crystals that still had the well defined, sharp edges from when they originally formed could not have been deposited at the site geologically. Under the supervision of Professor Luedtke, the approximately 70 quartz pieces that were possibly cultural were examined to identify the pieces that showed signs of having been worked, and/or were true crystals, and/or had had their edges dull by geological movement. In addition to pointing out a number of manuports, this analysis also revealed a pattern among the smoky quartz, which will be discussed below.

## Results

### *Crystals*

Six true crystals were found among the assemblage at Magunco (Figure 1). One was a rock crystal of classic needle shape, terminated pyramidally on one end. The other end had been broken off from where the crystal had been growing. The edges of the crystal's sides were sharp, lacking any sign of having been stream tossed. This suggests that the crystal had been collected from a cavity in a vein of quartz, rather than transported geologically. This crystal was

recovered from the southern corner of the foundation.

Another whole crystal, an amethyst, was recovered near the foundation. It does not show signs of having been worked. This crystal grew with other crystals, which have left imprints of their growth faces on this one. The amethyst lacks any sign of having been stream tossed, suggesting that it had been collected from the vein where it was grown. Again, this crystal was not necessarily imported from outside Massachusetts. Amethysts, although somewhat rare, have been found in rock fissures in Central Massachusetts.

Three partial crystals were found at different levels along the edge of the western corner of the foundation. All three are examples of clear rock crystal. These are not whole crystals, but do have one or more true crystal faces. The faces indicate that they were grown, rather than shaped out of crystalline material. In addition to the faces, all three show clear signs of having been worked (Luedtke 1999). This indicates that someone had broken the partial crystals out of a vein or perhaps a larger cobble that had originally been part of a vein.

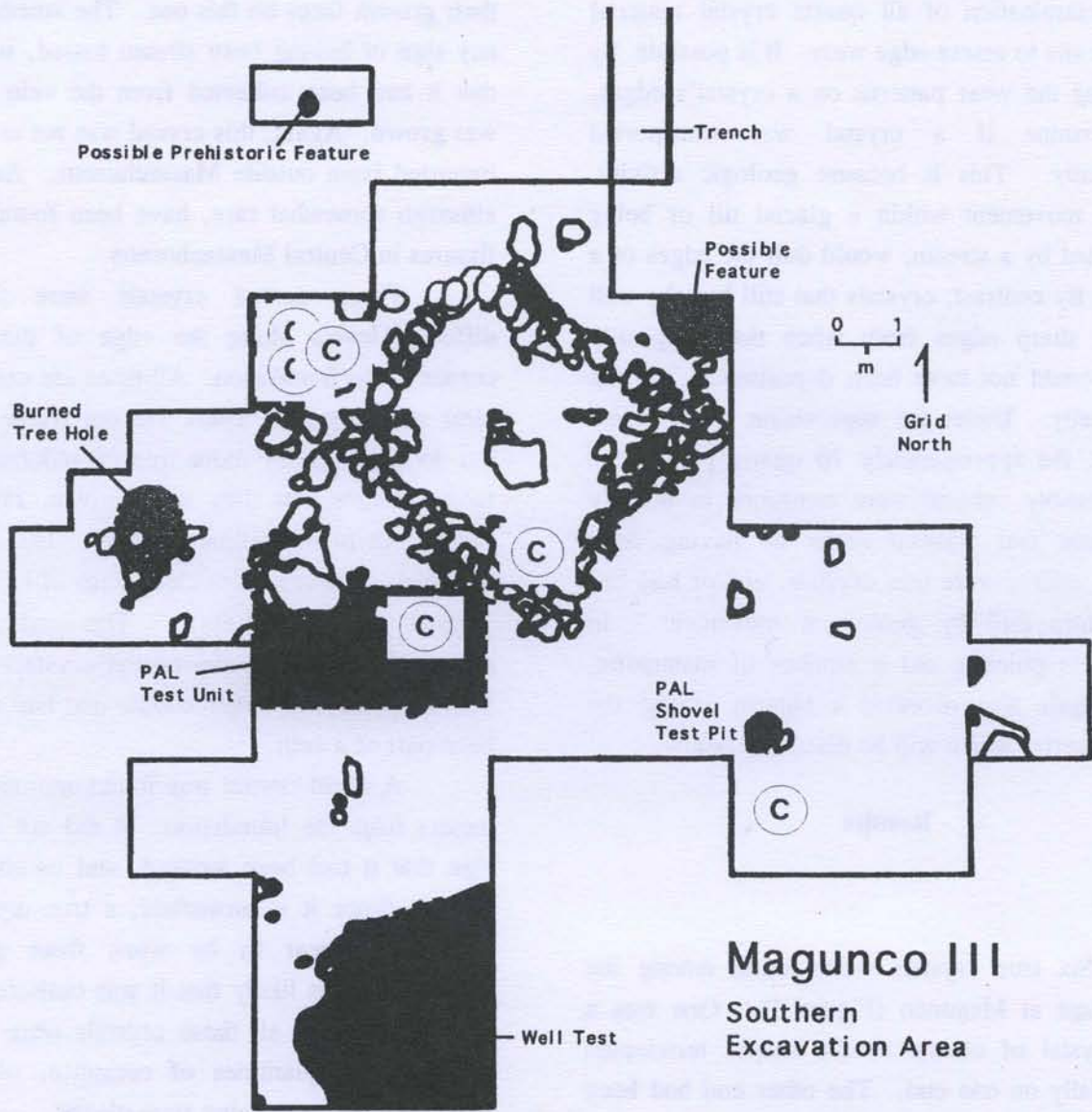
A small crystal was found approximately 5 meters from the foundation. It did not show any sign that it had been worked, and its edges were sharp. Since it is unworked, a true crystal, and does not appear to be worn from geological movement, it is likely that it was collected from a vein. Note that all these crystals were found in context with quantities of ceramics, metal, and glass and, typically, pipe stem pieces.

### *Smoky Quartz*

Smoky quartz can grow as a crystal in a void within a vein of quartz. However, none of the pieces recovered from the site (Figure 2) had true



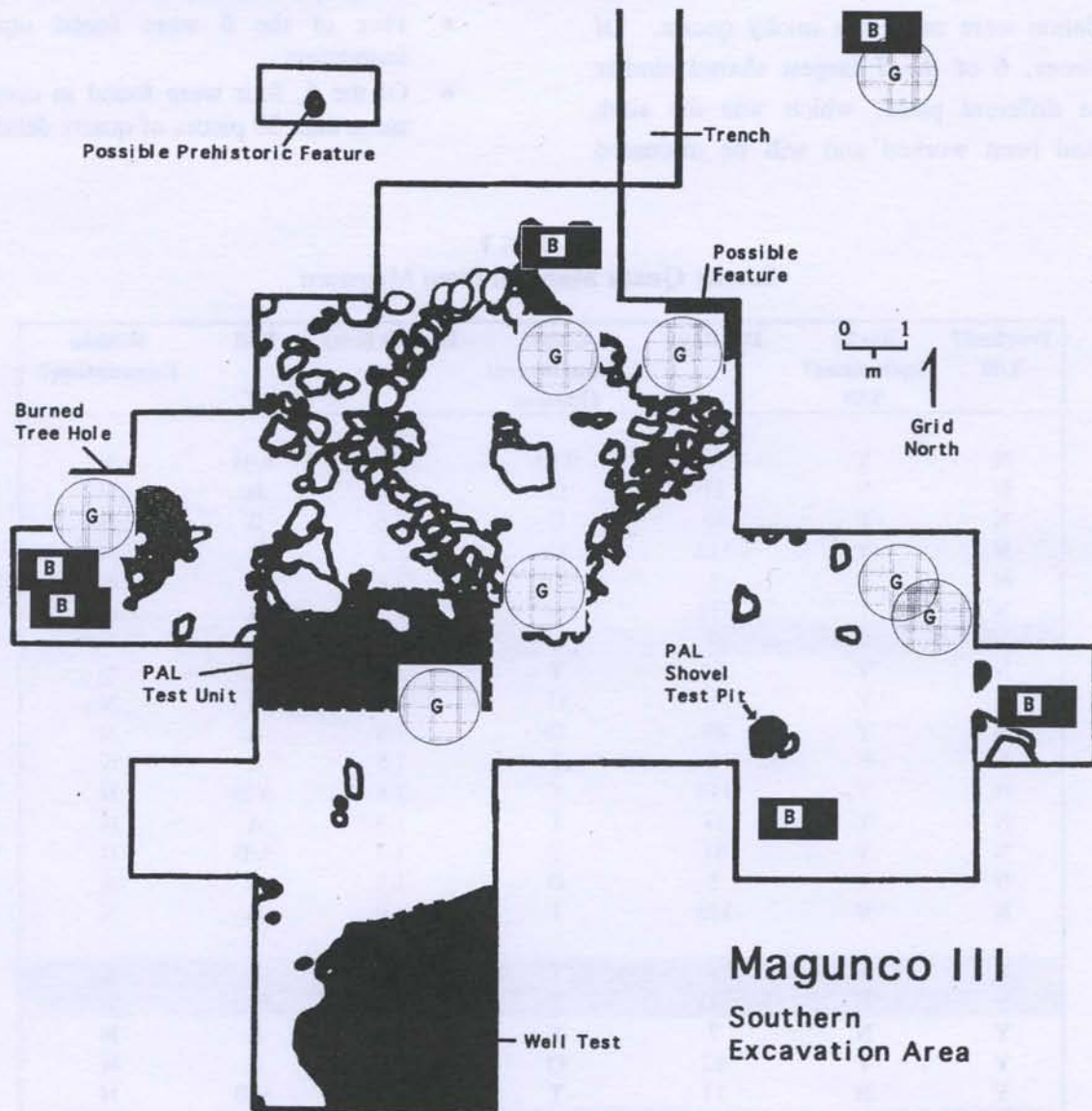
**Figure 1**  
**Building Foundation at Magunco III**  
**Showing Location of Quartz with True Crystal Faces**



Location of True Crystal = (C)

Note that "Grid North" is 34 degrees east of Magnetic North. Modified from an original diagram of the excavation area drawn by David Brown.

**Figure 2**  
**Building Foundation at Magunco III**  
**Showing Location of Selected Smoky Quartz Pieces**



The locations of the 6 largest unworked smoky quartz blocks are shown by rectangles with a "B"; the locations of the 8 worked smoky quartz gems (those translucent worked pieces without rocky inclusions) are shown by the circles with a "G".

Note that "Grid North" is 34 degrees east of Magnetic North. Modified from an original diagram of the excavation area drawn by David Brown.

crystal faces. This suggests that they were from rocks within the glacial till, possibly deposited on the hill itself. The sample examined contained 25 pieces of smoky quartz, 9 of which had been worked (Table 1). When sorted, a distinct pattern emerged which suggested how the inhabitants of the foundation were using the smoky quartz. Of the 25 pieces, 6 of the 7 largest shared similar traits; the different piece, which was the sixth largest, had been worked and will be discussed

below. The other 6 of the largest smoky quartz:

- In addition to all being dark smoky quartz, they are all opaque;
- None of them appear to have been worked;
- They all contain rocky inclusions, that is, an opaque section that is not smoky quartz;
- Five of the 6 were found outside the foundation.
- Of the 6, four were found in context with more than 50 pieces of quartz debitage.

**TABLE 1**  
**Smoky Quarz Material from Magunco**

Worked? Y/N	Rocky Inclusions? Y/N	Debitage	Clear/ Translucent/ Opaque	Length (cm)	Soil	Within Foundation?
N	Y	56	T/O	3.9	A/B	N
N	Y	21	O	3.7	B	N
N	Y	56	O	3.6	B	N
N	Y	115	O	3.2	B	N
N	Y	3	O	2.8	A2	N
N	Y	131	O	2.5	A	N
N	Y	9	O	2.2	A	Y
N	Y	12	T	2.2	A	N
N	Y	115	O	1.9	B	N
N	Y	89	O	1.8	A	N
N	N	5	T	1.6	A	N
N	Y	113	T	1.6	A/B	N
N	Y	17	T	1.3	A	N
N	Y	81	T	1.3	A/B	N
N	Y	5	O	1.2	A	N
N	Y	115	T	1.0	B	N
Y	N	3	T	2.6	A	Y
Y	N	1	T	2.2	A/B	Y
Y	N	7	T	1.5	A	N
Y	Y	62	O	1.5	A	N
Y	N	11	T	1.3	A/B	N
Y	N	15	T	1.1	A	Y
Y	N	62	T	1.1	A	N
Y	N	9	T	1.0	A	N
Y	Y	4	T	1.0	"1"	N

Note that 15 of the 16 unworked pieces in the sample had rocky inclusions, contrasted with only 2 of the 9 worked pieces. Pieces recovered from within the foundation are highlighted.

These traits become even more suggestive when compared to the 9 worked pieces of smoky quartz. These pieces are:

- From 2.6 cm down to 1.0 cm in length;
- Three of the pieces, including the 2 largest, were found in association with the foundation;
- Seven of the 9 are free of rocky inclusions, and all except one are translucent to clear.

Contrasting the two groups suggests that the blocky quartz was being processed into smoky quartz gems. The resulting worked pieces of smoky quartz were translucent, and free of rocky inclusions. These were not tools in the usual sense; their use was most likely spiritual. The two largest worked pieces were quite striking, and were found in the area of the northern corner of the foundation.

### Interpretation

A number of lithic tools were recovered from Magunco III. These, and the re-worked gunflints, were perhaps enough to demonstrate Native American activity at the site. However, working with Barbara Luedtke, I was able to make a case that a number of the unworked lithics were also cultural. The crystals and the amethyst appear to have been purposefully collected by the people who were using the foundation. Further, these same people appear to be processing translucent, inclusion-free pieces of smoky quartz out of larger blocks. As these pieces were shown to be cultural, the use of these materials will need to be included in any interpretation of the Ashland site.

Careful analysis was able to identify, with reasonable certainty, several of the pieces of quartz as manuports. A review of New England literature shows that quartz artifacts, similar to those found at Ashland, have been recovered at a number of Native American sites in the area. Magic stones

have been found unequivocally in grave contexts, often in a quantity of ochre (Fowler 1975). In Connecticut, crystals are commonly found on Archaic, Woodland, and Contact sites (McBride, personal communication).

The question therefore arises what the significance of these manuports is. If they were not lithic tools in the common sense, what were the quartz crystals used for? Brady and Prufer, in an extensive review of the literature, noted "... all of the ethnographic sources tie the use of crystals very specifically to shamanism." (Brady and Prufer 1999: 138). Further, Roger Williams attests to their use locally: "I have seen them keep as a precious stone a piece of Thunderbolt, which is like unto a Chrystall, which they dig out of the ground from under some tree, Thunder-smitten..." (Williams 1963 [1643]: 195). This would not be unexpected for a medicine man, as "A medicine man has usually received his medicine powers from the thunder" (Hultkrantz 1992: 34).

The interpretation as to what it means to find these shamanic objects at what was probably the meetinghouse of a Praying Indian Town is much more speculative. I believe their use may have been part of the Algonquian people's response to contact with the Europeans. After Contact, Algonquian society needed to contend with the invasion of the Europeans and the accompanying plagues. The Algonquian people living at Magunco were rebuilding their worldview to accommodate these new realities. They were looking for a way of coping with the power of the English and the Englishmen's angry Puritanical god. Adopting Christianity might have been part of a survival strategy, both cosmically and here on earth. However, the presence of likely shamanic crystals suggests that in addition to Puritan practices, the "Praying Indians" were maintaining their own old-time religious practices. This also suggests that the Praying Indians had not adopted the English culture

wholesale, but were engaging in a process of exchange.

As some scholars might put it, the European invasion had opened up the Algonquians' political and religious superstructure to change. I suggest that this emphasis on change supported the leadership roles of innovative individuals such as Passaconaway and Wanalancit. Passaconaway was a powerful shamanic powwow, while his son Wanalancit would become leader of the Praying Indian Town of Wamesit. In my view, this is neither a contradiction nor a coincidence. Both activities show a deep concern with the spiritual world. As innovative cultural brokers among the Algonquians, they were mixing what they believed of value in English culture into their own cultural outlook. I suggest that the same impulse that would prompt Algonquians to draw on shamanism, with its attendant material items such as quartz crystals, would lead innovative individuals to consider experimenting with Christianity.

The use of lithics may have had an additional appeal. The English were powerful, but did not usually work stone except for the specialized gunflint industry. Making many varieties of stone artifacts themselves, and conducting shamanic practices, were activities that

would distinctively mark Algonquians' culture as separate from that of their European neighbors.

In conclusion, the different types of quartz crystals found at Ashland in a foundation of what appears to have been a late 17th-century meetinghouse of the Magunco Praying Town, may be interpreted as shamanic stones suggesting the continuity of Algonquian cultural practices among Algonquians converted to Christianity.

### Acknowledgments

As part of my thesis, I wrestled to interpret why quartz crystals were found and what it meant to find these types of shamanistic objects in a Praying Indian Town. However, this venture into the theoretical superstructure was only possible because of the solid foundation Professor Barbara Luedtke helped me put in place when identifying the manuports. She set an example as a careful, cautious scientist that I will always try to follow. My work would not have been possible without Barbara's encouragement and enthusiasm. She was generous not only with her expertise in lithic analysis, but also with her guidance and enthusiasm.

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## MOVING BEYOND IRRELEVANT RELATIVISM: REFLECTIONS ON THE WOMEN FROM POKAPOAG PRAYING TOWN, MASSACHUSETTS

Joyce M. Clements

### The Concept of Relativism

As an undergraduate anthropology student in the 1960s Barbara Luedtke would have studied the concept of cultural relativism – the effort of anthropologists to avoid ethnocentric judgments, and describe societies in their own terms. As Professor of Anthropology, in the 1980s Barbara may have engaged in discussions of post-modern theory. She may have read *Writing Culture* (1986), a collection of essays edited by James Clifford and George Marcus, which articulates the difficulty of separating “analysis” from “evaluation” and “description” from “textual construction.” Perhaps, in the 1990s Barbara read Diane Wolf’s (1996) edited volume addressing feminist dilemmas in ethnographic research. Had she chosen, Barbara could have edited her own volume on problems faced by New England archaeologists in the field of cultural resource management. As a Commissioner for the Massachusetts Historical Commission, she was fully aware that conducting research on Native American burial grounds, for example, is extremely problematic. While some Native Americans acknowledge the importance of scientific research, many feel that human remains are sacred, and burial grounds are hallowed places that should never be disturbed. Some Native Americans accept that such research is an unpleasant scientific necessity while others deny the legitimacy of all archaeological investigations. In its simplest formulation, the debate pits scientific investigation against spiritual belief.<sup>1</sup>

The 1996 discovery of skeletal remains in the Columbia River exemplifies the troubled debate on the excavation and repatriation of human remains. Known as *Kennewick Man*, the physical characteristics of the skeleton suggested a mixed racial origin. The skeleton was initially described as “Caucasoid,” prompting the possibility that people of European stock were the original occupants of ancient North America. The skeleton’s racial ambiguity was overlooked, and its “Caucasoid” traits emphasized as the media reported the discovery to the general public. Before physical anthropologists could complete a thorough analysis of the remains, the Army Corps of Engineers claimed *Kennewick Man* for repatriation to local tribes. As the results of preliminary tests became available, however, it appeared that *Kennewick Man* might not be affiliated with any of the regional tribes because it exhibits markedly different physical traits to contemporary Native American populations. Physical anthropologists filed suit for the right to study the remains and as of July 2001 the Federal Court had yet to reach a decision.

The political and cultural ramifications of these findings are extensive and involve the identity of the earliest occupants of the ancient Americas as well as prehistoric migration into the New World. The findings also bring to the surface the fact that many Native American oral traditions maintain that their cultures arose in the New World, rather than the Old. In his recent book *Skull Wars*, David Hurst Thomas contextualized the debate within the history of anthropological theories of race and biological evolution. Reminding readers that ten

thousand years of evolutionary development separate *Kennewick Man* from all contemporary populations, and exposing scientific and philosophical problems with the concept of "race," Thomas concluded that the fundamental debate was not about tribal affiliation, or scientific research on human remains, but "about control and power over America's ancient past" (Thomas 2000: xxxix). Prompted by the Kennewick discovery, Elaine Dewar (2001) conducted an extensive review of early human remains in the Americas, focusing on the model of overland migration from Northeast Siberia. Her text presents a troubling account of anthropological "infighting," but contrary to Thomas, Dewar determined that the political battle involves power struggles in the present, not the past.

Prior to 1997, my involvement with cemetery investigations had been limited to historical research, general preservation planning, and field investigation of a colonial tomb. My preference would have been to honor Native American spiritual beliefs in general, but my specific philosophy was untested. That year my personal beliefs were radically challenged when a private developer hired me to determine whether graves from a Native American cemetery remained on property that he planned to develop. Approximately thirty years earlier, children had disturbed several graves which archaeologists then identified as an eighteenth-century burial ground for "Christian Indians."<sup>2</sup> Known as the Praying Indian town of Ponkapoag, missionary John Eliot gathered the community in 1657, and a small number of Christian Indians lived in the vicinity during the eighteenth century.<sup>3</sup>

Working under special permit issued by the Massachusetts Historical Commission and in consultation with the Commission on Indian Affairs, my field crew and I returned to the site in 1998 to determine if additional unmarked graves

remained on the land. Field investigations eventually revealed twelve intact graves beyond the original study area. The testing strategy did not involve excavating the graves, but used appropriate techniques to visually locate individual graveshafts, identify the internal configuration of the cemetery, and define and document its spatial extent. Despite our best efforts, during these procedures we unintentionally exposed a few human bones, several teeth, and a single skull. Under the direction of the Massachusetts Historical Commission and in consultation with the Commission on Indian Affairs, physical anthropologists studied the skeletal elements which were then repatriated to the Commission on Indian Affairs for reburial. When we had finished our investigations the cemetery was sealed beneath several feet of sterile sand and protected by a Preservation Restriction granted by the property owner. The results of the research are fully documented in a technical report on file with the Massachusetts Historical Commission and the Massachusetts Commission on Indian Affairs (Clements 1999).

During field investigations at the Burr Lane Cemetery, we encountered twelve intact graveshafts, one potential graveshaft and a small assemblage of disturbed human remains. The individuals were buried in simple, rectangular, conifer and hardwood coffins, which were sealed with hand-forged iron nails. Prior to interment the dead were wrapped in coarse burial shrouds, closed with plain copper or brass pins and laid fully extended in the coffin.

During contextual research for the project, I had been able to identify a number of Ponkapoag people connected with the general area, including some that had been buried in the small cemetery. These include Simon and Abigail George and their children, and later Jacob Wilbor, Mary Wills Wilbor, and their children. Several unnamed offspring and spouses from the George and Wilbor



families may also have been buried in the cemetery. The rector of the English Church in Canton officiated at one of the interments, that of Deborah George who died on July 24<sup>th</sup>, 1769.

Although not my primary goal, I was able to amass considerable information on women in the Ponkapoag community. During salvage operations at the Chapman Street Burial Ground, which was also used by the Ponkapoag people, Brona Simon identified a predominance of women in the cemetery sample (Simon 1990).<sup>4</sup> In her research on the Praying Indian Town of Natick, Jean O'Brien (1995) concluded that it too consisted primarily of female occupants in its later years. I have since come to believe that the cultural vitality of contemporary Native American groups derives in large part from women in these communities who resisted colonial assimilation and survived to pass on their traditions.

### *What Is Relevant?*

As I studied the Indian Affairs Records in the Massachusetts State Archives, I was deeply moved by the story of the Ponkapoag women. I read with outrage the tabulated debt to a grandmother, for a pair of shoes for her grandchild. I fumed as I read the details of a single woman's maternity and premature death, while the documents remained stubbornly silent on the father's involvement. I was disgusted to read about Guardians who mismanaged the Ponkapoag's money and lands. I felt I was witnessing a grievous historical injustice that is muted in colonial histories. I was drawn to the intimacy between historical records and evocative human remains. I felt there could be no closer link between the past and the present. I knew this site was not the same as others I had excavated and was profoundly challenged to balance my sense of outrage with critical analysis and "academic objectivity."

When I returned to academia in 1999, I began to explore feminist scholarship to understand how it differs from other intellectual positions. One of its fundamental premises is the belief that complete objectivity is an unattainable pursuit. Lila Abu-Lughod (1990) for example, notes that feminist scholars no longer search for objectivity, but question its very existence. Abu-Lughod sees objectivity as the child of scholars who privilege rationality and scientism. She would argue that no intellectual position is immune from individual bias, preconception, or academic training. To achieve objectivity a researcher would need to separate herself from her lived experience. She would suppress her personal ethics and academic training, distance herself from topical specialization, and deny the influence of mentors or colleagues. I would argue that such schizophrenic partitioning is not only academically unhealthy, it dangerously camouflages underlying motivations and personal goals.

Feminist anthropologist Donna Haraway (1988) rejects academic relativism, offering instead "partial, locatable, critical knowledges." This position concedes that scientific laws do not float free in the universe, but are formed by fallible humans: they are cultural constructions. Haraway therefore challenges "positivist" arrogance, and to counter such hubris she offers "situated" rather than transcendent knowledge, and holds researchers accountable for their theoretical positions. Barbara du Bois (1983) prefers impassioned scholarship to unobtainable objectivity. Such scholarship incorporates "values, purposes, methods and modes of knowing ... to integrate subjectivity with objectivity, substance with process, passion with responsibility and the knower with the known" (du Bois 1983:113). This approach allows a researcher to align herself with the people she researches, and integrate scholarship with ethical beliefs. Historian John Snider also rejects the notion of absolute

objectivity, and fears the conflation of science with fairness (1997:38). Snider reserves a place for subjectivity in scholarship, allowing that “[k]nowledge which does not inform the heart is not knowledge at all” (1997:38). Snider fears that scholars who retreat from ethical positions foster a diminished morality and trivial scholarship, ultimately making their work irrelevant (Snider 1997:46).

Let me be clear that I am not advocating unbridled emotional expression, or a return to Romanticism. I strongly support scientific method, empirical data, and the use of reason to balance emotion. What I do ask is that researchers acknowledge the role of subjectivity in historical interpretation and presentation. My intention is to link intellectually provocative scholarship with rigorous research and carefully formulated theory that incorporates ethical considerations and personal values. I thus argue that my concern to uncover the history of the women in the Ponkapoag community does not render my work academically flawed. To the contrary, this emphasis is necessary to counteract existing bias in the historical documents. As I continue to research this community I will problematize the recording of specific events, knowing that much is missing from the historical record. At the same time, my awareness of “partial knowledge” allows me to abandon the futile search for a single historical truth, aware that Puritan men compiled and preserved their version of historical events, recording what was important to them, and omitting much that is of interest to me. Thus commitment to impassioned scholarship validates rather than corrupts the choice of subject matter. Indeed, I would argue that my concern for the Ponkapoag women makes me a more committed and thorough researcher. Through lived experience I know I do my best research and analysis when I am emotionally *and* intellectually engaged with a particular topic. Documentation and record keeping

are not rational sciences, and private agendas have always governed historical interpretation.

My attempt to retrieve women’s voices from historical records is no more biased than the original documentation process, but what about the political purpose?

In the nineteenth century, Native American women Ella Cara Deloria and Mourning Dove self-consciously used texts as political tools (Finn 1995). As Native writers, working at the margins of academia, both women understood the need to present their versions of cultural history in counterpoint to ethnographies written by Euro-American men. Anthropologist Shelly Romalis acknowledges the mixture of politics and scholarship, and argues that written history reflects deliberate social, political, and ideological *intervention* (1999:8, emphasis added). Mascia-Lees, Sharpe & Cohen (1989:33) demand that researchers undertake a “close and honest scrutiny of the motivations for research.” One of the differences between ethnographers and archaeologists is that ethnographers form relationships with living people in contemporary societies. Archaeologists study the silent people and cultures of the past. If archaeologists cannot alter the outcome of history, are they immune to political alignment? I would argue that they are not. My own research goals are explicitly political: I want to bring to center stage the Ponkapoag women and others whom history has neglected. I want to pay less attention to abstract processes such as treaty negotiations, political alliances, and trade partnerships, to focus on the human impact of political decisions because colonial history resonates for contemporary global development. Like the Ponkapoag grandmothers, contemporary women in merchant colonies work to feed and clothe their children and grandchildren. By witnessing the history of the Ponkapoag women we come to understand the ramifications of

imperialistic policies. Our duty as witnesses suggests that academics bear an ethical responsibility to inform international developers of the potential consequences for contemporary intrusion in indigenous societies.

As researchers acknowledge the political agendas underpinning impassioned, subjective scholarship we must also struggle with the issue of historical "presentation." The notion of authorial responsibility certainly permeates feminist anthropology, as does the issues of "appropriation of voice" (Wolf 1992). Feminist ethnographers rely on collaborative scholarship and acknowledge their informants' significant contributions. This perspective fosters democratization and provides a space for multiple layers of ethnographic interpretation. But since feminist archaeologists cannot dialogue with the dead, how can they formulate a cultural history that does not privilege their position as researcher, or situate themselves as spokespeople for Native history? I do not speak for Native American women, collectively or as individuals: If I write their history will I assume an authority I have not been given?

In *Writing as Witness* Mohawk author Beth Brant offers an important comment for scholars who choose to work across cultures. Brant states "I do not say that only Native peoples can write about Natives... I do say that you can't steal my story and call it your own ... If your history is one of cultural dominance, you must be aware of and *own* that history before you can write about me and mine" (1994:52, original emphasis). Brant's words offer an important reflection for ethnohistorians and suggest a position from which to write. As I conduct cross-cultural research on Native American history I must clearly identify myself as an outsider. This positioning acknowledges my partial vision derived from a specific location on the indigenous-colonial divide, and it concedes my

accountability for the inferences I draw from that perspective.

As I continue to reflect on the history of the Ponkapoag women, and history writing in general, I am further sensitive to the need to make history accessible. To be effective, research must extend beyond the academy to inform a wider audience. International developers do not, as a rule, read academic histories, archaeology reports or ethnographies, so academics must present the results of their research in a form that will create the greatest effect. The authors in the feminist text *Women Writing Culture* provide examples of ethnographic research that is both theoretically rigorous and readable (Behar and Gordon 1995). Furthermore, by emphasizing subjectivity, these feminist ethnographers demonstrate how scholarship is a cultural construction that portrays a single version of reality. My analysis of the women's community at Ponkapoag will also be an individual interpretation. Other voices are still to be heard and other visions will yet be seen.

The debate over *Kennewick Man* will proceed, and opinions will remain divided for years to come. Archaeologists in Massachusetts will struggle to accommodate divergent cultural values as they juggle scientific needs with spiritual beliefs. The ethical dilemma of scientific research into human remains will continue, but I hope I have offered some thoughts to inform the debate. I believe that a feminist perspective allows us to move beyond irrelevant relativism to ethically defensible subjective positions.

#### *As Barbara Might See It*

I do not know exactly how Barbara felt about feminist theory, and I am not certain that she would have endorsed my particular vision. In early 2000 she sent me an email outlining her position on feminism. As I recall, she supported equality

between the sexes, but had little time for extremists who adopt illogical arguments to advance their cause. While she was academically rigorous, Barbara eschewed radical positions in favour of moderation. I knew her to be extraordinarily ethical, remarkably hard working, and inordinately generous to students and colleagues. She was the quintessential scholar who balanced private research with community service, and academic mentoring. She supported amateur archaeologists as she simultaneously inspired professionals and academics. Although she did not write from a feminist perspective and she might not have agreed with my position, I believe she would have supported the journey. While her own journey ended prematurely, a generation of her students, colleagues and friends live on to witness and celebrate her contribution.

#### Acknowledgments

I am indebted to a number of individuals who assisted with the Burr Lane Cemetery cultural resource management project, to which this essay refers. Dr. Dena Dincauze searched her personal records from the 1969 salvage excavations and provided information that clarified the significance of the original research. I am grateful to Dr.

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Dr. Michael F. Gibbons of the Department of Anthropology, University of Massachusetts, Boston and Ms. Harley Erickson, then of the Massachusetts Historical Commission, analyzed the skeletal material, and Ms. Tonya Largy analyzed wood adhering to the coffin nails. These special analyses amplified my understanding of the cemetery occupants and their lifestyles. Field technicians, Matt Daniels, Jon Howard and Paul Mohler worked as field crew, assisting with recording the exposed grave shafts. Jon Howard also conducted some of the preliminary research. I acknowledge their support, and their friendship.

I am particularly grateful to Mr. Edward L. Bell, Senior Archaeologist at the Massachusetts Historical Commission, who guided me through the legal and technical requirements and provided emotional support during this sensitive project. I hope that Ed knows I have enormous respect for his own impassioned scholarship. Because of recent changes in their leadership, the Commission on Indian Affairs was unable to send a representative to the site during the field research. I understand that archaeological investigation of human remains is particularly distressing for members of their community and I was honored by their trust.

#### ENDNOTES

1. Bell (1994) offers a sensitive and intelligent account of the complexities of scientific investigations on human remains. Bell's discussion includes a thorough review of theoretical orientations, field methods, physical anthropological approaches, material culture studies, history and ethnography of death, and the legal basis for archaeological investigations.
2. Dr. Dena Dincauze conducted the investigations for the Peabody Museum of Ethnology and Archaeology at Harvard University.
3. There are numerous variations in the spelling of "Ponkapoag." I have used different forms at different times, but chose this version because it is the spelling that appears on the tribe's web page, and I assume it reflects their choice. (<http://members.aol.com/neponsett/ponkapoag.html>).
4. The investigations and skeletal analyses of the Burr Lane and Chapman Street cemeteries were conducted in accordance with the Massachusetts Unmarked Burial Law and in accordance with local permitting and approvals. All the human remains were repatriated to the Commission on Indian Affairs and have since been reburied. Bell (1994:3-4) describes the legal basis for archaeological investigations of human remains in Massachusetts.

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## LOCAL LITHIC MATERIALS IN ARCHAIC TECHNOLOGIES: MYLONITE AND AMPHIBOLITE FROM THE CASTLE HILL SITE, WAYLAND, MASSACHUSETTS

Tonya Baroody Largy and Duncan Ritchie

### Introduction

Castle Hill (19MD339) is a large multi-component site located on the margin of the Great Meadows National Wildlife Refuge in Wayland, Massachusetts. The site is located on a glacio-lacustrine delta with a mantle of aeolian deposits adjacent to wooded wetlands and marshes along the Sudbury River (John Thompson, personal communication). A series of investigations by the Wayland Archaeology Group in the late 1970s and the late 1990s revealed that cultural deposits were spread over approximately 10 acres (4 hectares). The site was used primarily during the Middle and Late Archaic periods, with some evidence for occupation in the Terminal Archaic period.

The very diverse lithic assemblage from Castle Hill includes tools and debitage of two distinctive materials associated with formations of local metamorphic rocks. A rock suspected to be a mylonite associated with the Bloody Bluff fault system was used by both Middle and Late Archaic groups. Another rock type, amphibolite schist, appears to have been used only in the Middle Archaic period. The known distribution of these materials on archaeological sites is restricted primarily to the Sudbury, Assabet, and Concord drainage (SuAsCo), although mylonite may have a wider distribution (Eric Johnson, personal communication). Likely source areas for these materials are located in upland sections of the SuAsCo basin. Potential sources for the mylonite

also occur to the northeast in the upper Shawsheen drainage.

Both of these materials may have escaped recognition due to misidentification. The suspected mylonite often resembles a fine grained quartzite. The most fine grained, translucent varieties of mylonite without banding could also be confused with chalcedony or some other cryptocrystalline lithic material. Amphibolite schist is soft and debitage of this material frequently lacks features normally seen on flakes of other rock types. This paper describes the geological context, petrography, known distribution and periods of use for these two lithic materials to inform other archaeologists working in southeastern New England. Improved recognition of these materials should help to reconstruct their distribution and patterns of localized lithic resource use and group or social boundaries within river drainage based territories.

### Site Location and History of the Archaeological Investigations

The Castle Hill site is located on fairly level terrain at approximately 130 feet of elevation on the east bank of the Sudbury River. Hazel Brook, a small stream draining upland marshes, runs along the southeastern boundary of the site, and presently passes through marshlands before joining the river (Figure 1). An esker, named Castle Hill by early settlers, lies a short distance to the southeast. At the base of the esker winds an old historic road, the Castle Hill road, probably an old Indian trail, which was used until the 1950s. This road may have been the route taken by the East

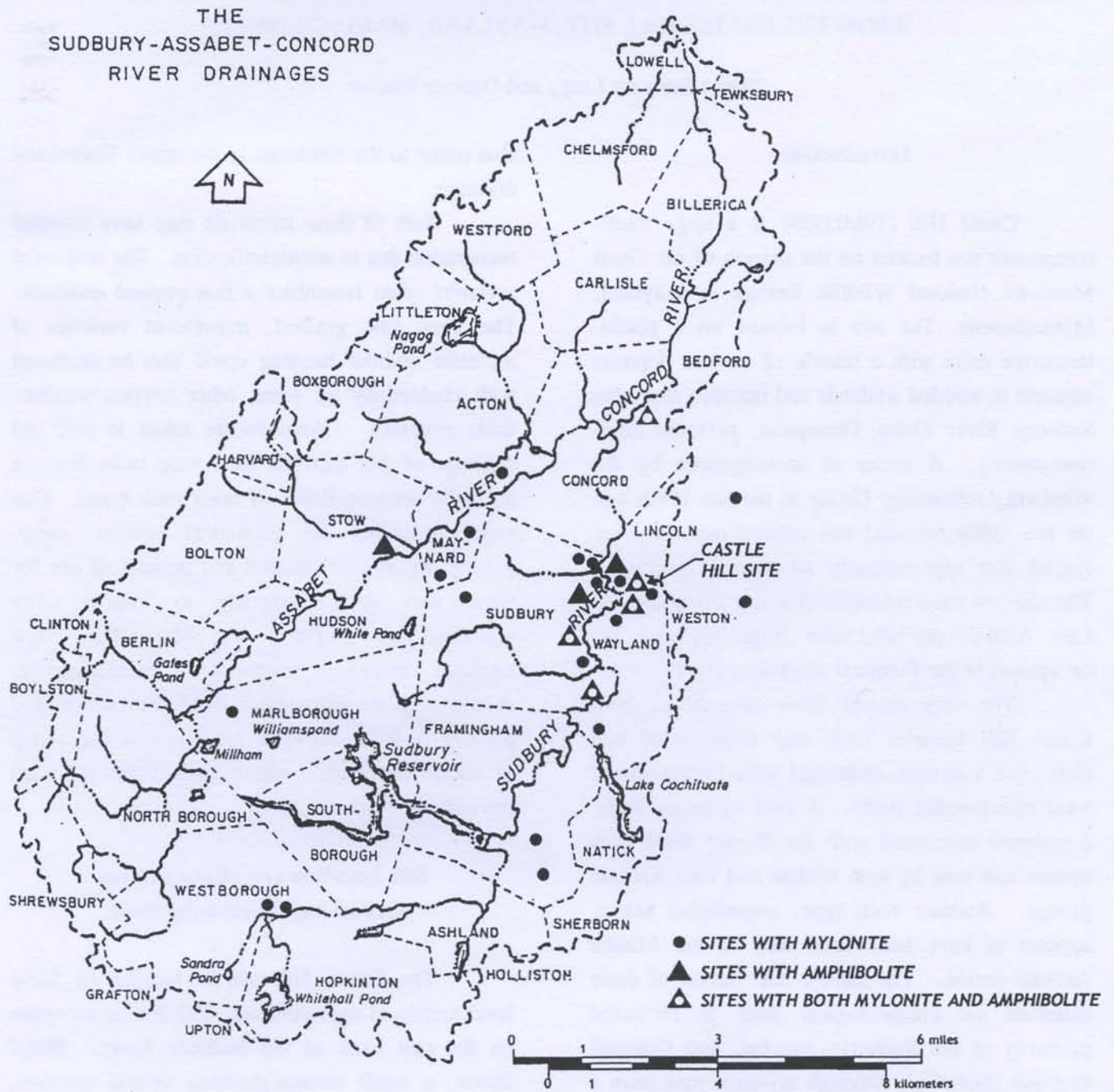


Figure 1. Location of Castle Hill and other sites with mylonite and amphibolite within the Sudbury/Assabet/Concord River drainage.

Sudbury Militia as they marched to Concord on April 19, 1775, although the exact route is not recorded (Robinson 1976:39). It is well known that early historic roads followed Native American trails. The Castle Hill Road follows the esker, a high path through wetlands that leads to the site. The land was most likely in continuous use as farmland or pasture through the eighteenth and nineteenth centuries. Much has been written by Thoreau and others (Anonymous 1859; Donahue 1989) about ecological changes to the river valley since the arrival of Europeans. These studies show that changes in the physiography of the river over the last 400 years have probably impacted local archaeological sites. Raised water levels from dams built further downstream in Billerica probably flooded the lower margins of sites like Castle Hill more frequently, causing former meadows to become floodplains. The Native name for the river, "musketaquid" or "musketaquid," is composed of two Algonquian words, "muskeht," meaning "grass," and "ahkeit," meaning "ground," which if applied to the river would signify "grassy brook" or "meadow brook" (Hudson 1889:1-2).

The 10 acres (4 hectares) on which the Castle Hill Site lies is part of a 12 acre (4+ hectares) parcel owned by the Wayland School Committee (Alf Berry, personal communication). In the mid-1970's a baseball field occupied the northeast end of the site. Around this time, the Park and Recreation Commission received permission to build a soccer field on the remainder of the parcel. In 1977, Largy and another Wayland citizen interested in archaeology, Barbara Robinson, became aware of activity at the site and notified the Town Surveyor, Lewis Bowker, that this site on public land was an early archaeological site. He informed the Massachusetts Historical Commission and a permit was issued to Charles Nelson of the Anthropology Department of the University of Massachusetts at Boston, who was

the 1977 coordinator of the Coalition for Archaeology in Massachusetts. Barbara Luedtke co-directed the survey carried out in November, 1977, by anthropology students from the university (including Largy) and experienced members of the South Shore Chapter of the Massachusetts Archaeological Society (Largy 1977).

At the time of the survey, most of the site was open space partially covered with occasional trees, berry bushes and grass. Erosion was widespread, exposing large areas of fine sand where artifacts could easily be found. The survey showed the extensive disturbance of the soils, with historic/modern period materials being mixed with prehistoric artifacts in the deeper levels. Over the years, children from nearby houses had used the area as a playground, digging deep holes for their forts, among other activities.

The Castle Hill Site had attracted archaeological interest for at least half a century. J. Alfred Mansfield (Mansfield 1961), an avocational archaeologist who collected on many sites in the area, began visiting Castle Hill in the early 1940s, when the site was a potato field. His collection from Castle Hill totaled more than one hundred artifacts, mostly projectile points and edge tools. Another collector donated his artifacts to a nearby local environmental education center but these were unlabelled and mixed with their general artifact collection. A staff member at the same center conducted excavation classes at the site. However, the results of this investigation were never reported, and recovered artifacts likewise were unlabelled and remain part of that general collection. Largy began collecting on the site prior to the 1977 survey. Both the Largy and Mansfield collections were donated to the Wayland Archaeology Group (WARG).

WARG was founded under the aegis of the Wayland Historical Commission to undertake a salvage excavation of Castle Hill (Ritchie and



Gardescu 1994:209-222). Organizers of this effort were Largy and Robinson with strong assistance from Ritchie. At least 40 citizens of Wayland and Sudbury and numerous elementary school children from Sudbury participated in this volunteer effort which began in the Spring of 1978 and continued for two seasons. In 1980, additional work was done by Robinson with students from the Wayland Middle School. After the initial salvage work, public lectures on it were presented to Wayland citizens. The first lecture drew a crowd of 300 people indicating strong public interest in the town's earliest history. The soccer field built on a portion of the Castle Hill Site has been in use since its construction in 1980.

The second salvage project began in October, 1997, led by Largy and Paul Gardescu, Coordinator of the Wayland Archaeology Group and Chair of the Wayland Historical Commission and continued over three seasons. The catalyst for this excavation was a plan by a group of parents, in conjunction with the Park and Recreation Department, to construct a tot playground in the adjacent wooded area of the site for younger siblings of the soccer players using the field. Barbara Luedtke signed on as Principal Investigator for a site examination. She visited the site several times and was generous with her time and counsel, as she always was.

The periods represented at the site by diagnostic artifacts were Middle and Late Archaic with some evidence for occupation in the Terminal Archaic. Radiocarbon dated features suggest activity on the site was most intensive from about 4600 BP to 4000 BP. The first radiocarbon date was obtained in 1979 on charcoal taken from a deep firepit feature and analyzed at the Birbal Sahni Institute, Lucknow, India (4480  $\pm$  110 BP; 5500 B.P. - 4800 B.P. calibrated; BS-225). A second date was obtained in 1981 (4100  $\pm$  155 BP; 5050 B.P. - 4050 B.P. calibrated; GX-7640) (Hoffman

1988: 26-27). Field work in the late 1990s produced radiocarbon dates ranging from 5180  $\pm$  45 BP (GX-24232-LS;  $\delta^{13}\text{C}$  corrected; 6170 B.P. - 5750 B.P. calibrated) to 2750  $\pm$  50 BP (GX-24181-LS);  $\delta^{13}\text{C}$  corrected; 2950 B.P. - 2760 B.P. calibrated). There are no cultural materials associated with the radiocarbon dates obtained during the late 1990s.

### Lithic Materials from Castle Hill

Castle Hill was known for its wide range of lithic materials. Mansfield (personal communication) stated this site had a greater variety of materials than most sites he had collected in the Sudbury River Valley over five decades. Excavation and surface collection has recovered a wide range of lithic materials corroborating Mansfield's observations. At least 16 different materials have been identified visually in the large lithic assemblage from the site. All is not yet understood about these materials, their sources, or their distributions. At least 40 Middle Archaic Neville and Stark projectile points are recognized in the assemblage from the Castle Hill Site. This is one of the largest known assemblages of Middle Archaic points from the SuAsCo drainage basin.

We have also noted patterns of Middle Archaic lithic resource procurement apparent in the assemblage from Castle Hill and other nearby sites (Ritchie and Gardescu 1994:214; Largy 1980). Ritchie (1979) first recognized both mylonite and amphibolite schist as coming from bedrock outcrops in nearby uplands west of the Castle Hill Site within the towns of Sudbury and Maynard. An early analysis of almost 3,000 surface collected flakes from Castle Hill showed that mylonite at 9%, and amphibolite at 5% constituted a fair percentage of the materials utilized in manufacturing chipped stone tools at the site (Largy 1980).

Earlier, both mylonite and amphibolite were given other names, indicating the difficulty in visual recognition and proper identification of these lithic types. In the late 1970s, during the first phase of investigation at Castle Hill, mylonite was called "banded metaquartz." However, a local soils geologist with extensive field experience in the region called it "mylonite" at that time (Leona G. Champney, personal communication). Champney also identified amphibolite as "phyllite." Materials from the earlier excavation at Castle Hill were catalogued using these earlier terms (banded metaquartz and phyllite). Ritchie (1979) however, recognized "phyllite" as being amphibolite schist based on direct comparison of archaeological material with samples from bedrock outcrops.

### Geological Context

To find likely source areas for the mylonite and amphibolite first recognized at the Castle Hill Site, fieldwork was undertaken using US Geological Survey bedrock maps as a guide. Archaeological material (chipping debris, artifacts) has been matched successfully with samples from bedrock outcrops. Based on their visual similarity to rock exposed in outcrops, the two materials (mylonite, amphibolite) found at Castle Hill and a number of other sites, can be correlated with specific formations mapped and described by geologists (Ritchie 1979; Lary 1980). Exposures of these rock formations have been examined to see where potential source areas and prehistoric quarry sites might be located. Petrographic thin section analysis of both chipping debris and samples taken from bedrock outcrops was also done to confirm that the attribution of archaeological material to rock formations is correct.

The two archaeologically recognized lithic materials, mylonite and amphibolite, can be correlated with meta-volcanic and metamorphic

formations located in a zone of highly altered, sheared rocks in proximity to the Bloody Bluff fault. This fault is one of the largest structural systems in eastern Massachusetts, extending from Essex County southwest through Middlesex and southern Worcester Counties to the Lake Char/Honey Hill fault in eastern Connecticut. Nelson (1975) noted that the section of the Bloody Bluff fault zone from the northeast part of the Concord quadrangle southwest to Framingham and Marlborough contains cataclased/altered rocks showing varying degrees of deformation ranging from slightly altered to those that have been crushed and recrystallized to mylonites. More recent studies have placed these mylonitic rocks within a larger unit, the Burlington Mylonite Zone. This southwest to northeast oriented zone is located between the western margin of the Boston Basin and the Bloody Bluff fault. Sheared crystalline rocks occur within a zone up to 5 km in width and 50km long outside the western boundary of the Boston basin. (Castle et al 1976; Skehan et al 1998:A3-1)

### *Mylonite*

The material referred to as mylonite is a fine grained, quartzite-like rock ranging in color from light grey (Munsell Rock Color 5Y 7/2), greyish yellow green (Munsell Rock Color 5GY 7/2) or grey green (Munsell Rock Color 5G 6/1, 5GY 8/1) to dark green and from translucent to opaque. Much of the material found in archaeological contexts is banded with thin, parallel laminations of light grey to grey green. Some very fine grained varieties are translucent light grey-white to grey green with no visible banding. Debitage is commonly found as tabular pieces which may retain fracture plane surfaces.

This material is derived from a formation of rock that was originally described in the geological literature as a metamorphosed volcanic

tuff (Nelson 1975). The Kendal Green Formation was identified as a light tan to light grey, very fine grained and thinly laminated metatuff consisting of quartz, feldspar, sericite mica and calcite. This rock unit also has dark greenish-grey fine grained metatuff composed of quartz, biotite mica, plagioclase feldspar, epidote, chlorite and hornblende (Nelson 1975: a,b). According to Nelson (1975: a,b) the Kendal Green Formation occurs as fault blocks in the Framingham quadrangle, which extends from Ashland on the south to parts of Framingham, Marlborough, Sudbury, and Wayland on the north. In the northern part of this quadrangle, along the Bloody Bluff Fault, these Pre-Cambrian rocks lie adjacent to the Westboro Quartzite. The blocks of Kendal Green Formation are thin strips lying along the northern side of the fault zone. In the northern portion of the Natick quadrangle and adjacent Concord quadrangle in Weston, just outside the western boundary of the Boston basin, there are small fault blocks of the Kendal Green Formation. Other exposures of this formation are located further northeast in the Lexington and Burlington area along the alignment of the Bloody Bluff fault.

More recent studies by geologists appear to have renamed this rock as the Kendal Green Mylonite. It is one of several mylonites associated with the Burlington Mylonite Zone that are distinguished from each other on the basis of age, composition and the types of faults that produced them. Exposures of the Kendal Green Mylonite have been mapped at Nobscot Hill (Framingham), Weston center, and Bear Hill (Waltham) (Skehan et al. 1998: A3-2, 4, 14)

Our inspection of outcrops of the Kendal Green Mylonite in several sections along the southwest to northeast alignment of the Bloody Bluff fault zone from Framingham to Lexington showed that there is considerable variation in the rock exposed. While some outcrops were of rock

clearly too altered by metamorphism, or coarse textured, to have been potential sources of material for making stone tools, others closely matching that found as debitage and artifacts have been found in several areas along the fault zone.

Moving from southwest to northeast along the alignment of the Bloody Bluff fault zone we found that the outcrops in the Nobscot Hill section of Framingham and Sudbury were highly altered and fractured. They were not suitable for stone tool making and did not visually match material found on nearby archaeological sites in the SuAsCo drainage. However, a few miles to the east, a series of outcrops on the southeast slope of Goodman Hill in Sudbury contain fine grained, siliceous rock which closely matches the mylonite from a number of nearby prehistoric sites in terms of both color range and texture. Further northeast along the Bloody Bluff fault, outcrops of this formation near the Kendal Green type locality in Weston were also found to be fractured and altered like the rock at Nobscot.

Another outcrop series near Route 128 in the Lexington/Burlington area was shown to us by USGS geologist, Patrick Barosh, during an initial field trip to find potential source areas. These outcrops contained banded mylonite that was also a close visual match to archeological material from Castle Hill and other sites. A sample taken from this area was used for thin section analysis. Even with the limited fieldwork done so far, potential source areas for the mylonite found in archaeological contexts have been identified in several sections of the Burlington Mylonite Zone and associated Bloody Bluff fault, particularly in the towns of Sudbury and Lexington.

### *Amphibolite*

The amphibolite found as chipped stone tools and debitage in archeological sites is a dark

grey (Munsell Rock Color N2, N3) to dark green grey (Munsell Rock Color 5GY 2/1, 5G3/2) rock with a schist-like appearance. It occasionally displays thin grey white veins of an unknown mineral. Both artifacts and debitage frequently have flat, platy surfaces and remnants of fracture planes, reflecting the tendency of this material to break along these parallel planes.

Based on a comparison of archaeological material to rock exposed in outcrops, the lithic type described as "phyllite" or "amphibolite" at sites such as Castle Hill in the SuAsCo drainage is derived from the Marlboro Formation. This rock unit is exposed in sections of the Marlborough, Framingham, and Maynard quadrangles. The type locality for this formation first described in the geological literature by geologist B. K. Emerson in 1917 is a series of outcrops near the center of Marlborough (Emerson 1917; Hansen 1956).

The Marlboro Formation is primarily a fine grained medium grey to dull olive grey amphibolite schist composed of quartz, mica, feldspar, chlorite and a small amount of magnetite. It also contains small veins and knots of green epidote. The amphibolite is interlayered in some places with biotite schist and gneiss (Hansen 1956: 8; Nelson 1975a). This rock extends in a broad curving band oriented in a southwest to northeast direction through the extreme eastern part of the towns of Hudson and Stow, the southern portion of Maynard, and continues across Sudbury and into Concord.

An area of numerous outcrops in the eastern portion of the Marlborough quad, and another group of exposures near Vose Pond on the Maynard/Sudbury town line represent probable source areas for the amphibolite found on prehistoric sites in the vicinity. Hand samples from outcrops in the Vose Pond area are comparable to amphibolite chipping debris and artifacts from Castle Hill and other sites. Amphibolites are also

reported as units within other bedrock types such as the Worcester Formation (towns of Harvard, Bolton) and the Nashoba Formation (towns of Acton, Stow, Maynard) in other parts of the Hudson and Maynard quadrangles. These have not been examined for comparison with archaeological material and may also contain potential lithic source areas.

### Archaeological Context

#### *Geographic Distribution of Amphibolite and Mylonite*

Both of these materials have limited geographical distributions and are concentrated on archaeological sites in the SuAsCo basin. To date, chipped stone tools and debitage of mylonite and amphibolite are known from 27 sites, almost all in the SuAsCo drainage. Of this total, 19 sites have only mylonite, three sites have only amphibolite, and five sites have tools and debitage of both materials (Figure 1). Mylonite, being more extensively used for stone tool making and easily recognized, is found in collections from sites in the middle to lower Sudbury and Assabet and upper Concord drainages. These sites are located in Westborough (Cedar Swamp III and Cedar Swamp IV), Marlborough (Flagg Swamp Rockshelter), Framingham (Washakumaug and an unnamed site), Wayland (Mansion Inn, Heard Pond, Castle Hill, Watertown Dairy, Shilling Meadow, Sand Hill, Sherman's Bridge, Murphy's Fields), Sudbury (Willis Pond, Rice Farm, Pantry Brook Village/Davis Farm), Pantry Brook/M-23-86, Weir Hill #9, Concord (Sleepy Hollow)(Blancke 1998), Acton (Pine Hawk) (Waller and Ritchie 2001), Maynard (Puffer Pond, Taylor Brook)(Gallagher et al. 1985), Lexington (Whittemore Farm)(Ritchie et al. 1990) and one "find spot" near Hobbs Brook in Lincoln. All of these sites but Whittemore Farm and the Hobbs Brook find spot, are in the SuAsCo

basin. These two sites are in the Hobbs Brook watershed; Whittemore Farm is near the boundary of the Charles, Shawsheen and Concord drainages.

Amphibolite is more restricted in distribution, reflecting both its limited use and the difficulty archaeologists may have had in recognizing this material. At present, artifacts and debitage of amphibolite are known from eight sites, all located in the middle Sudbury and Assabet drainages (see Figure 1). These sites are in Stow (Stow Acres Golf Course), Concord (Sleepy Hollow)(Blancke 2002), Sudbury (Rice Farm, Roe Field), and Wayland (Heard Pond, Castle Hill, Watertown Dairy, Staiano). Projectile points, bifaces and chipping debris of this material have been found at seven of these sites. Evidence of its use for ground stone tools comes from two gouges found at sites (Rice Farm, Roe Field) in Sudbury.

#### *Quarrying and Use in Archaic Lithic Technologies*

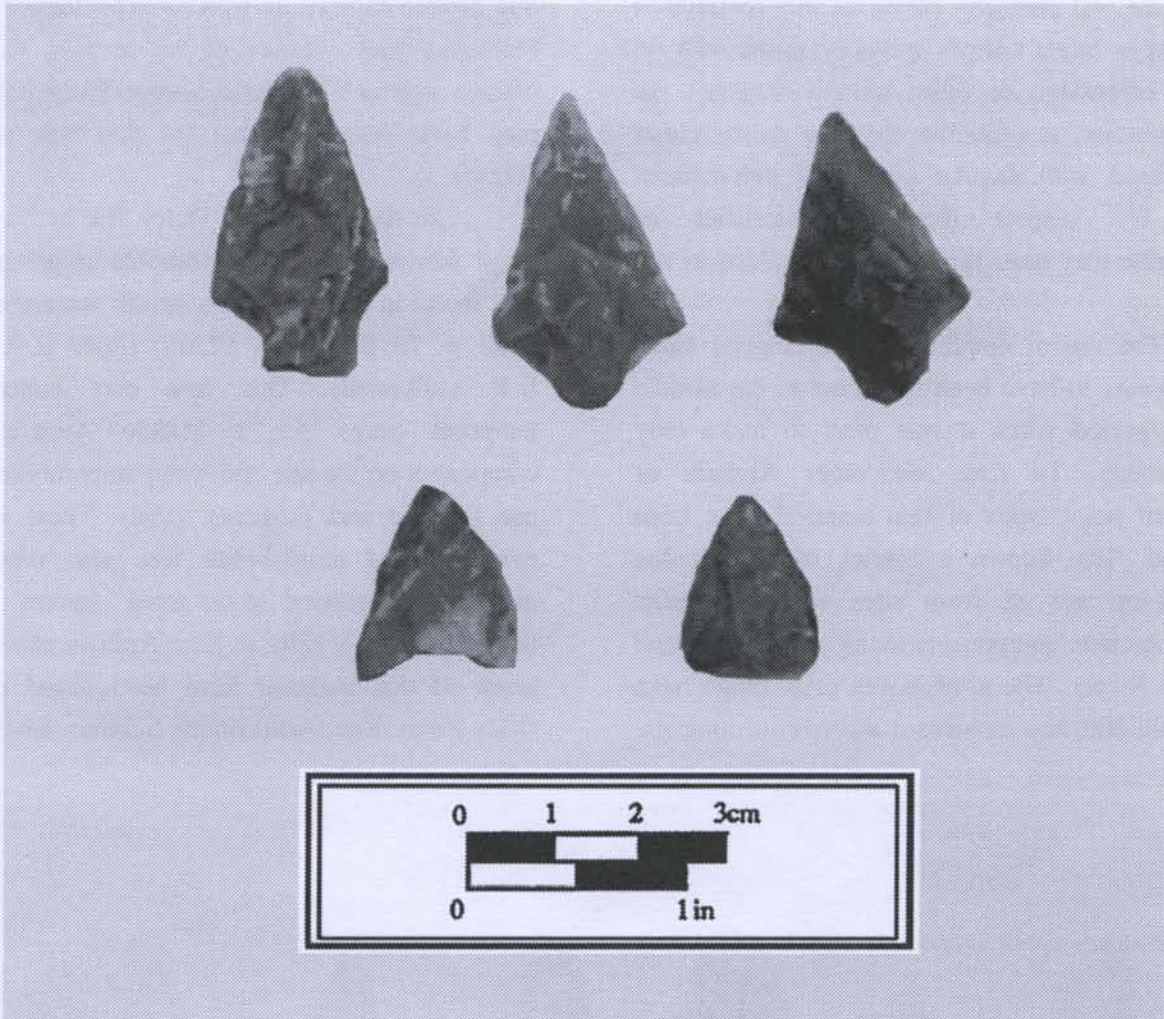
Mylonite and amphibolite apparently were recognized as local lithic types by earlier artifact collectors, who knew these materials had a distribution limited to sites within the SuAsCo drainage. There is no evidence that a search was made for source areas and no known quarry sites were recorded in the past. Limited surface inspection by us of those mylonite and amphibolite outcrops in Framingham, Sudbury, and Maynard that are most likely source areas for both materials has not revealed any obvious evidence of quarrying or associated lithic workshop loci.

However, prehistoric extraction or procurement of these materials was probably a simple process of collecting tabular blocks or fragments from talus slopes below outcrops or excavation of shallow pits adjacent to outcrops to obtain unweathered pieces. Prehistoric quarrying probably did not involve much hammering of pieces from outcrops since enough raw material

could be obtained from the surface or by shallow excavation. The type of quarries associated with outcrops of mylonite and amphibolite from the Kendal Green and Marlboro Formations are expected to have "low archaeological visibility" and could be difficult to recognize (Ritchie 1983: 87-89).

These quarries were probably too small to have dense deposits of chipping debris or quarry waste exposed on the surface. Activity at outcrop source areas might have been limited to selection of the most suitable pieces from talus deposits and very little actual reduction or flaking. Biface production may have been done mostly at habitation sites. Weathered tabular pieces of both mylonite and amphibolite with flaked margins are in assemblages from some of the larger sites on the Sudbury River within a 5 mile radius of probable source areas. These tabular pieces are identical to material that can still be found at outcrops and were probably talus blocks collected to serve as blanks for making bifaces. Some of the mylonite also splits into very thin plates or sheets a few millimeters thick that can be used to make bifaces or projectile points simply by flaking their margins.

Mylonite was used during the Middle and Late Archaic periods but amphibolite seems to have been restricted to the Middle Archaic period when it was used to manufacture Stark points (Ritchie 1979). In the SuAsCo drainage, fine grained grey-green to grey white translucent mylonite was used in the Middle Archaic period to make Neville points and bifaces, although scrapers and unifacial tools of mylonite have also been observed (Figure 2). In this area, mylonite has a strong association with Middle Archaic lithic technology and bifaces or debitage of this material often serve as a marker for components of this temporal period in the absence of other clearly diagnostic artifacts. Concentrations of mylonite debitage marking lithic workshop loci have been documented on a number



**Figure 2.** Neville (top row) and Squibnocket Triangle-like points (bottom row) of mylonite from the Sherman Bridge site, Wayland, Massachusetts (A. Hosmer collection, Concord Museum).

of sites with significant Middle Archaic components such as Castle Hill and Watertown Dairy in Wayland, and Pine Hawk in Acton.

A limited number of small Squibnocket-like triangles and small stemmed points of mylonite are known from some of the larger riverine zone multicomponent sites in the middle to lower Sudbury and upper Concord drainage. It suggests some continued use of this local material between about 5000 and 3000 years ago. Mylonite appears to have been a minority material in these Squibnocket/Small Stem Point lithic assemblages.

There are generally no more than a few of these points made from mylonite in any site assemblage or artifact collection.

The amphibolite found in archaeological contexts as chipped stone tools and debitage is a medium grained material that ranges in color from dark grey to dark grey green. In texture it resembles other soft, metamorphic rocks and might be confused with a dark, fine-grained schist. Amphibolite is much less common than mylonite in Middle Archaic contexts. However, amphibolite tools might be overlooked because of their rough

appearance and chipping debris of this material is often flat or has a narrow splintery shape with no bulb of percussion or other normal attributes. In rocky subsoils, amphibolite chipping debris could be confused with angular pieces of non-cultural stone. We suspect these characteristics of amphibolite may have limited its recognition in the past.

The use of amphibolite for chipped stone tools appears to have been restricted to the Middle Archaic period when it was used to make only Stark points. To date, no other Archaic or Woodland point types of this material have been identified. The known examples of amphibolite Stark points are all from sites with substantial Middle Archaic components along the Assabet and Sudbury Rivers. The amphibolite assemblage from the Castle Hill Site includes a number of complete

and broken bifaces as well as a perforator with a Stark-like base. Some of the narrow, elongated bifaces approach the dimensions of Stark points and may have been preforms for this type of point (Figure 3).

At the Watertown Dairy Site in Wayland a small concentration of amphibolite chipping debris was found in proximity to a hearth feature dated to 6680 ± 70 BP. (Beta 52205) (7620 B.P. -7470 B.P. calibrated). This date may indicate the temporal range for a Middle Archaic Stark component on the site and when amphibolite was in use (Ritchie and Feighner 1994). There is some evidence that amphibolite was also used as a material for ground stone tools. Several gouges likely to be of Middle to Late Archaic provenience made of this material have been found on sites (Rice Farm, Roe Field) on the Sudbury River.



**Figure 3.** Bifaces and perforator (second from left) of amphibolite from the Castle Hill Site, Wayland, Massachusetts.

### Petrographic Analysis

To confirm that our identifications of the suspected mylonite and amphibolite were accurate, sets of geological hand samples and artifacts or debitage from archaeological contexts were used to prepare petrographic thin sections. The samples were submitted to Barbara Calogero for thin sectioning and analysis. Anthony Philpotts of the Geology Department, University of Connecticut, also examined the thin sections made from these samples. The thin sections were prepared according to standard petrographic methods. Additional analysis and description of the thin sections was done by O. Don Hermes of the Department of Geosciences, University of Rhode Island.

The set of geological or hand samples consisted of pieces of the suspected mylonite and amphibolite schist from outcrops within likely source areas for these materials. The geological sample of suspected mylonite (Sample A) was obtained from an outcrop in Lexington, Massachusetts shown to the authors by geologist Patrick Barosh. This sample was also visually similar to rock in outcrops of the Kendal Green Formation in the town of Sudbury. It was olive grey (5Y 4/1) to light olive grey (5Y6/1) in color with a dark rusty weathered rind.

The geological hand sample of amphibolite (Sample B) was collected from one of the outcrops near Vose Pond in the town of Maynard described by Hansen (1956) as the Marlboro formation. The rock exposed in these outcrops was visually similar to amphibolite artifacts and debitage from Castle Hill and other sites in the vicinity. This sample was dark greenish grey (5GY 4/1) in color on the weathered exterior; freshly broken surfaces were dusky green (5Y 3/2).

Archaeological materials selected for petrographic thin section analysis were pieces of amphibolite and suspected mylonite from excavated

contexts on the Castle Hill Site. The amphibolite sample (EU 83N/85.5E) was a tabular piece of this material with a roughly flaked edge, possibly a bifacial tool blade fragment. Both exterior and freshly broken surfaces were dark grey (N3, N4). A piece of suspected mylonite debitage (EU60/68) displaying the typical color range (olive grey, 10Y 6/2) and translucency associated with this material was also chosen for thin sectioning.

Calogero and Philpotts (2001) identified the geological sample of suspected mylonite (Sample A) from Lexington as a typical mylonite based on features visible in thin section. It displayed dark and light parallel layers, some of which are interrupted by faulting. The sample was a homogeneous material completely metamorphosed by compression and grinding at a fault zone. Due to the degree of crushing and metamorphism evident in the thin section it was not possible to determine the original rock or parent material from which this mylonite was formed. Hermes (personal communication, 4/2002) also identified Sample A as a mylonite composed mostly of quartzite, based on key features visible in thin section. These features included rotated grains and CNS planes from shearing and deformation of the parent rock.

Sample B, the geological hand sample from Vose Pond, Maynard, was identified by Calogero and Philpotts as a mylonitized amphibolite. Features visible in thin section were a distinctive green color and strained and flattened amphiboles in a schisty groundmass. The green color was due to the presence of these amphibole minerals (Calogero and Philpotts 2001). This amphibolite contained hornblende, some quartz and epidote as an accessory mineral (Hermes, personal communication, 4/2002).

In thin section, the piece of suspected mylonite debitage (Sample EU60/68) from the Castle Hill Site appeared to be a crystalline rock with a high silica content. Dark wispy lines visible



in thin section were wavy and not parallel as in a typical mylonite (Calogero and Philpotts 2001). Hermes also noted that this rock lacks typical mylonite features and was primarily composed of cryptocrystalline quartz, similar to chalcedony.

The thin section prepared from the sample of amphibolite (Sample EU83N85.5E) from the Castle Hill Site displayed features similar to the geological hand sample (Sample B). The rock was composed of light and dark strained and flattened material with green amphiboles similar to those observed in the geological sample. Some minor differences between Sample B and the Castle Hill sample were noted. The accessory epidote observed in Sample B was not present in the debitage sample from Castle Hill. The archaeological sample from the Castle Hill Site also had smaller amphiboles and was finer grained in comparison to the geological or outcrop sample (Hermes, personal communication, 4/2002). This material was mylonitized by pressure and grinding at a fault zone (Calogero and Philpotts 2001). The finer grained texture of the Castle Hill Site sample suggested it was derived from a source area or outcrop intentionally selected by Native Americans for this characteristic.

Additional information on the identity of the suspected mylonite was obtained from petrographic analysis of a debitage sample from the Pine Hawk Site in the town of Acton. This large multicomponent site along the lower Assabet River contained lithic workshop loci associated with Middle and Late Archaic period depositions. A debitage sample of suspected mylonite from one of these workshops was analyzed by Don Hermes. Macroscopically, this sample consisted almost entirely of fine-grained cryptocrystalline quartz with sparse, tiny grains of a black mineral. In thin section, this material showed a very fine grained texture and was highly foliated, consisting mostly of recrystallized grains of quartz and accessory

feldspar grains. Sparse acicular muscovite mica and chlorite were present in grains mostly oriented parallel to the foliation, with some at a steep angle to the layering. There were also a few coarse grained late stage veinlets of polygonal quartz subparallel to the foliation. This rock type appeared to be a schistose or foliated quartzite most likely formed by metamorphism of a sedimentary quartz sandstone or siltstone. While this rock may have formed in a mylonite, diagnostic features of the mylonitization process were not observed in thin section (Hermes in: Waller and Ritchie 2001). Like the debitage from Castle Hill, this sample from the Pine Hawk Site was composed mostly of cryptocrystalline quartz and lacked typical mylonite features.

### Conclusions

Through the application of petrographic analysis to samples of lithic material from the Castle Hill Site and several suspected source areas we have been able to confirm the identity of rock suspected to be amphibolite and mylonite. Amphibolite from the Castle Hill Site was found to closely resemble material exposed in bedrock outcrops located west of the Sudbury River. These outcrops and others nearby form a likely source area for the amphibolite used locally in the Middle Archaic period. A sample from an outcrop in Lexington was confirmed as mylonite pointing out a probable source area for this material. The rock in this outcrop is visually similar to banded mylonites found in archaeological contexts within the Sudbury/Assabet/Concord drainage.

The problematic debitage samples of suspected mylonite from the Castle Hill and Pine Hawk Site with features more typical of cryptocrystalline quartz or chalcedony-like rock suggest there is more unexplored variation in the local bedrock formations containing material

visually identified as mylonite. These samples may represent a type of very fine grained, quartz-rich rock occurring within a specific section of a formation like the Kendal Green Mylonite or some other unknown source that has yet to be identified.

The information we have been able to collect on the role of amphibolite and suspected mylonite in Middle and Late Archaic technologies within the SuAsCo drainage fits well with larger patterns of lithic resource use. An increased emphasis on locally available lithic resources after circa 7000 BP was first observed at the Neville site in the southern Merrimack basin of which the Sudbury, Assabet, and Concord Rivers are a major tributary (Dincauze 1976). The local lithic materials often included volcanic and metamorphic rock types from smaller sources and the sets of materials varied between drainage basins. This pattern of resource use appeared to be a larger sub-regional trend including the eastern/southeastern Massachusetts area.

Middle Archaic groups in the SuAsCo drainage seem to have followed this broad trend. Neville points were frequently made of rhyolite from the Lynn volcanic complex and northern Boston basin argillite as well as local quartzite (Westboro Formation) and mylonite. An orientation to lithic source areas in the northern Boston basin is suggested by the high frequencies of rhyolite and argillite in Neville assemblages.

After about 6000 BP, lithic materials from sources within the SuAsCo drainage appear to have become more important. Stark points were mostly chipped from Boston Basin argillite. However, distinct local materials, such as quartzite, crystal tuff and amphibolite make up much of the remainder of chipped stone tool assemblages. This set of lithic materials demonstrates that Middle Archaic populations were making regular use of local resources (Ritchie 1979).

The mylonite and amphibolite from Castle Hill and other sites are important for the way they illustrate what may be described as "micro traditions" or localized patterns of lithic resource use in river drainages across southern New England in the period from about 7500 to 6000 years ago. Some vestiges of this pattern, illustrated best by the occasional use of mylonite, apparently continued in Squibnocket Triangle and Small Stem Point technologies after about 5000 years ago. With additional research at a localized scale, including petrographic thin section and geochemical analysis, it should be possible to add more details to this general picture of how local lithic materials were used in Middle and Late Archaic technologies.

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We dedicate this paper to the memory of Barbara Luedtke who encouraged both of us in our separate areas of archaeological interest. She was Largy's first teacher and mentor at the University of Massachusetts in Boston. Barbara was our friend as well as our colleague.

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## THE KEENE-HAYES SITE, AUBURN, MAINE: A MULTIDISCIPLINARY LEARNING EXPERIENCE

Mary T. Concannon

### **Abstract**

*This paper examines the efficacy of historical archaeology as a curriculum for upper-level students. Although neither the first nor the only archaeological dig undertaken by high school students in Maine, the Keene-Hayes site (ME 002-020) in Auburn, is unique in several ways. First, much of the planning and site development has been driven by the research questions and interests of the students themselves. Second, because the project has been a multi-year undertaking, students have had the opportunity to gain skills in multiple facets of archaeological work, including documentary research, artifactual analysis and cataloguing, and oral history. Moreover, excavation has been led by a team of professional archaeologists, who have combined classroom lessons with hands-on instruction in field techniques and methodologies.*

### **Introduction**

The groundwork for the Keene-Hayes excavation was laid in 1992, when a service-learning project to revitalize the 40 acres of Auburn Heights in Auburn, Maine, was undertaken by the students of Edward Little High School. An outdoor learning center was begun, combining a theatrical amphitheater (where classes are held and student plays presented) with bike and exercise trails and greenhouses. In 1994, the Franklin Company donated 6.4 acres of land to the project for the development of the "Snake Trail," a winding pathway through the project area. Students named their site "ELF Woods," an acronym for the Edward Little-Franklin project (Shanahan, 1994, no page).

During the school year 1997-1998, the

freshman team was charged with cleaning the trails, in the process uncovering the Keene-Hayes home foundation. Interest in doing an archaeological dig was high, and teachers Lori Twiss, Shiho Burnham, Michelle Bouchard, and Tom Campbell worked with the students to begin site development. Following introductory training in the "Sandbox Archaeology Project" at Fort Western (Augusta, Maine), the team - students and teachers - went to work.

Library and documentary research on both the home and the Keene-Hayes family was initiated, with the students interviewing a number of people in the community who had known Herbert Hayes (the last owner), or who could tell them about the history of Auburn Heights. In the field, surface surveys were conducted and artifactual recovery was begun. The foundation area had been used as a dump in the years following Herbert's death, but the recovered materials - especially farm implements, the wagon and sleigh parts which had been in his Uncle Ralph Keene's probate inventory, and stove pieces - clearly related to the family. Indeed, initial recovery was extraordinary, yielding faunal materials, stoneware sherds, and a large number of glass and ceramic pieces. Students catalogued their finds, plotted them on a master map, and cleaned and processed their artifacts. In addition, they consulted experts at the Maine State Museum, who worked with them on identification, cataloguing, and curation. As part of their museum visit work, students went behind the scenes, where the Curator of Historical Collections challenged them to relate museum pieces to the sherds they had recovered on site.

At this time, the author, an historical archaeologist, was working at KIDS Consortium, a non-profit educational organization based in Lewiston, Maine that provided funding for Edward Little High



**Figure 1.** Archaeologists, Pamela Crane and Peter Morrison, teaching students technique at the Keene-Hayes house site.

School's service-learning programs. I was invited by the team to help expand the program and serve as an advisor.<sup>1</sup> As well, because it was becoming increasingly clear that further site development would entail hiring professional archaeologists, Pamela Crane and Peter Morrison were retained to work with the students and staff in the spring of 1999 (Figure 1). In a series of brainstorming sessions, a plan for the 1999-2000 school year was created.

It is important to understand that the *students* played a crucial role in this strategic planning. They helped design the excavation, and their desire to learn how to properly excavate, curate artifacts, do background research, and conduct oral histories kept the project going. In every sense, they were a valued asset to the dig team.

The archaeologists put the students through some intensive training. Classes were given on archaeology as a discipline, on stratigraphy and the law of superposition, on field techniques, etiquette,

and handling and using the "tools of the trade." A practice "site area" was set-up so the students could get a feel for trowel use and learn how to bag recovered materials.

Their continued research, classroom sessions, and fieldwork helped the students frame some essential research questions which focused on several key areas: the house and yard; the family and its social life and livelihood; and personal data on Herbert Hayes. Among the issues that piqued the students' interest were:

- What the site had been like before the Keene-Hayes family lived there;
- What kind of furnishings, lighting, and appliances they had used;
- What the inside of the house had looked like;
- What personal belongings each generation passed on to its children;
- The family's history and its social status within the community;

- The whereabouts of living relatives;
- The family's involvement in the community;
- The types of food and drink they had consumed;
- The way the family used the farm and orchards through time, and whether that use provided a livelihood and income.

After drawing from this comprehensive list and comparing it to the materials uncovered during the surface surveys, students selected a section of the site that seemed best able to yield answers to the questions which most interested them. This became the excavation unit in which they worked.

The results of the team's research are presented here as a narrative history of the house, its owners, and the social historical context in which they lived.

### **The Keene and Hayes Families**

When Adin Keen,<sup>2</sup> Sr., purchased 16 acres of land on Auburn Heights from Daniel Hall on May 11, 1867, the town was a growing agricultural and industrial community. Auburn Heights was a 40 acre site characterized by rich farm lands, bountiful orchards, and a successful feldspar mining concern. Keen paid \$2,200 for a lot consisting of "sixteen acres and one hundred and fifty-six rods more or less," as well as a right of way from this lot to the "County road." In addition, Keen assumed the mortgage of one Ruth Lufkin, receiving a second acre parcel for the sum of \$500.00 and taxes. Despite having changed hands several times, the lot had been little altered from 1839, the earliest written description thus far located (Androscoggin County Deeds, Book 47: 284, 285; Cumberland County Records, Book 171: 97).

Keen was a tailor by trade who spent his spare time tilling his land and developing his orchards. Indeed, by the 1870s, market gardening was a popular and profitable business, and the 17 acre farm provided an ample opportunity to expand his

economic base. Between 1900 and 1901, he and his wife, Nancy, sold their homestead to their three sons. Harry received a lot of land measuring 100 feet by 100 feet as well as the right of way leading from Minot Avenue; this represented the southernmost portion of the original lot, abutting land once owned by Ara Cushman. At the time of his death in 1941, Harry owned a one-family, two-story home and a one-car garage (Androscoggin County Probate Records, Book 190, page 161; Ferguson 1891: 68).

Sons Ralph and Adin, Jr., retained the bulk of the property, including the acre parcel conveyed by Hall in 1867, and the right-of-way to a farm road abutting the property. Under the terms of the deed, Ralph was to assume the responsibility of caring for his parents and their other survivors, presumably his sister, Lola and her son, Herbert Hayes (Androscoggin County Deeds, Book 191: 218-221).

In 1910, Adin, Jr., sold his half of the property back to Ralph for "one dollar and other valuable Considerations." Ralph also retained the family homestead located at #2 Keene Street, at the junction of Cushman Place. He passed this and his other goods - including some hay, a cow and a heifer, 40 hens, gardening implements, and a wagon and sleigh - to his sister, Lola, when he died in 1930. Lola and Herbert lived in the house until her death in 1943. As she died intestate, Herbert inherited the property and buildings as her sole heir-at-law (Androscoggin County Deeds, Book 231: 499; Book 675: 569-571; Book 817, 186-188; Androscoggin County Probate Records, Book 327: 388; Smith 1949: 1).

Herbert Hayes - the last owner of the Keene-Hayes site - was an intriguing individual (Figure 2).

He was born in the farmhouse on March 23, 1897 to Lola and Frank Hayes, and spent his youth on the property. No marriage records for Lola and Frank have been located to date, and there is speculation that Herbert *may* have been an illegitimate child. This theory is bolstered not only by the fact his mother is the only person to ever sign his school report cards

but also because Herbert is interred alongside his mother under a headstone which simply reads "Hayes." Herbert attended Edward Little High School, and his contemporaries remember him as quoting extensively from Walter Scott's *Lady of the Lake*. His yearbook picture is an early indication of his socialist leaning, as he is remembered with the quote:

"Peace, peace, the Socialist's kind  
Is the only peace that enters my mind."

Given that he graduated in 1918, the message takes on a deeper meaning. During this period, the Socialist Party in America was actively and aggressively protesting the country's involvement in World War I. Eugene Debs, a leading member of the Party, had been jailed for his part in the anti-war movement. Not to be deterred, Debs ran for the presidency from his cell, and received close to five million votes. Obviously, something about this larger social movement touched Hayes deeply.

After he finished school, Hayes went to work at the Fitz Brothers Shoe Factory where he was a shoe last designer employed by the company.<sup>3</sup> Hayes seems to have spent his spare time continuing work on the orchards his grandfather had started. In addition to the apples, pears, and grapes he cultivated, he imported bulbs for his gardens from Denmark. He was also interested in combining new ideas with old traditions. For example, while his farming techniques seemed to be cutting edge, he had neither a furnace nor electricity in the house and his only source of lighting came from kerosene lamps. Hayes was an avid antiques collector and had an extensive gun collection, for which he made his own bullets. Herbert was a Mason - he belonged to the Kora Temple of Mystic Shrine - and was described by his neighbors as intelligent and kindly. John Sturgis, who lived at the foot of Auburn Heights as a young man, remembers playing "in Keene's fields and the Franklin woods." Indeed, Sturgis recalled that Hayes would begin the



**Figure 2.** Photograph of Herbert Hayes from his Edward Little High School Yearbook, 1918. This is the only known image of him.

yearly Fourth of July celebration by firing his canon (Sturgis: personal communication, September 2001; Smith 1949: 14).

Nonetheless, Hayes had his challenges through the years. As land on the Heights was sold to new owners, Herbert found it increasingly difficult to maintain privacy on his property. Much of the acreage he owned was unoccupied, and the woods and open areas were used as camping grounds or target shooting by youth looking for adventure. Herbert also had problems with theft, both on his land and in his home. On October 8, 1949, he surprised three young men inside his home. As he chased them outside, he was shot, and although he was rushed to the hospital, the wounds proved fatal. The murder shocked the community, but produced a rich documentary record, as the event received extensive media coverage.

At the time of his death, Hayes - who was 52 years old - owned the home and several outbuildings,

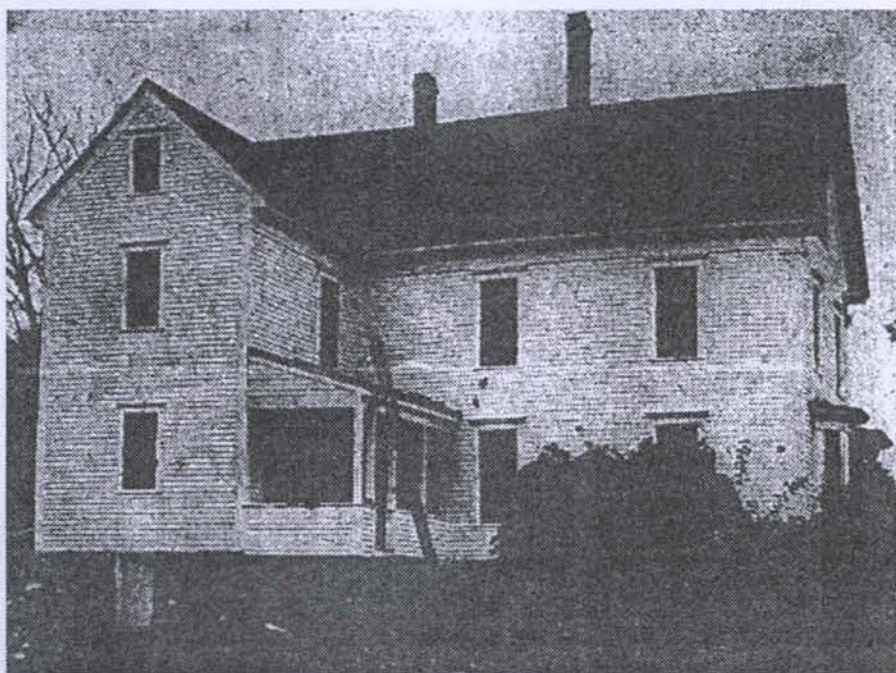


and was in the process of rebuilding his barn (Figure 3). His probate inventory gives the value of his lands and goods at close to \$20,000 (Androscoggin County Probate Records, Docket # 26242).

The Keene-Hayes homestead lay vacant for several years. Eventually, his heirs - Arthur and Marguerite Keene, Jackson Keene, Marion Mower, Allan & Emeline Keene, and Joan McNear - sold the property to the Sterling Company in 1952 for "\$1.00 and considerations." The Sterling Company transferred its title to the property to "the Inhabitants of the City of Auburn, a municipal corporation duly organized" for the purpose of purchasing land for city use. The Inhabitants, in turn, transferred the Keene land and other lots to the Maine School Building Authority for use as the site for a new school. As well, the Franklin Corporation, which also owned land on Auburn Heights abutting the Keene lot, provided additional acreage that still serves as a right-of-way to the site and school grounds. In 1959, the home was demolished in preparation for the new Edward Little High School building (Androscoggin County Deeds, Book 668: 536; Book 675: 571; Book 817: 186-187, 193).

### Establishment of a City

The Keene-Hayes site is located in west Auburn, a district of the city of Auburn. Joseph Welch was the first settler in the original Auburn Village that preceded the city, building a small home in 1797. Welch was soon followed by a Mr. Dillingham, who constructed a gristmill in 1798. However, the pace of growth was slow, and as late as



**Figure 3.** Photograph of the Keene-Hayes home taken in 1949. This view shows the side of the house including the ell.

1816, there were only two roads leading out of town, the Minot Road and the road to the river (Moody 1918: 9; Stanwood 1864: 145).

In the early 1800s, a small village, now remembered as Goff's Corner, had sprung to life. James Goff, Jr. and his family moved to Auburn in 1822. Goff purchased a building from Jacob Read, and the men ran a successful general store. Other buildings included Edward Little's law office, Barker Brooks' blacksmith shop, and a millinery run by Orra Raynes, Auburn's first teacher. The numerous lakes and ponds within the city limits provided enough power to run the saw, grist, tanning, and pulling mills. A ferry service connected Auburn with its sister city of Lewiston. In her recollections, however, Esther Moody remembered the outskirts of Auburn as being a "wilderness" during her youth, complete with a blueberry bog (City of Auburn 1997; Ferguson 1891: 604; Goff 1901; Moody 1918: 9; Stanwood 1864: 145).

The first shoe factory - Minot Shoe Company

- was opened in 1836, thus beginning an industry that would define the city until the early years of the 20th century and provide employment opportunities for the growing population. Indeed, by 1860 the 25 shoe companies in town were not only exporting their goods throughout the United States, they were on the cutting edge of production technology. For example, innovations such as copper-toed shoes were developed, while labor shortages during the Civil War increased the need for mechanical improvements and tools. By 1871, Auburn's shoe manufacturers were making over two million pairs of shoes a year (City of Auburn 1997).

During the 1840s, Auburn not only became a town, but the hub for the "first railroad in Central Maine ... the Androscoggin and Kennebec Railroad." Because it connected with the Atlantic and St. Lawrence railroad running into Portland, the rail provided an international marketplace for Auburn's goods. Based on its industrial growth, expanding population, and far-reaching connections, Auburn was selected as the seat for the newly-established Androscoggin County in 1854, receiving a whopping 778 votes to Lewiston's 12 (Ferguson 1891: 603; City of Auburn 1997).

While the development of the *city* of Auburn is important to understanding the overall picture of population and economic growth in the town, each neighborhood has its own unique history. Thus, a few words on the community of west Auburn (location of the Keene-Hayes site) are needed here.

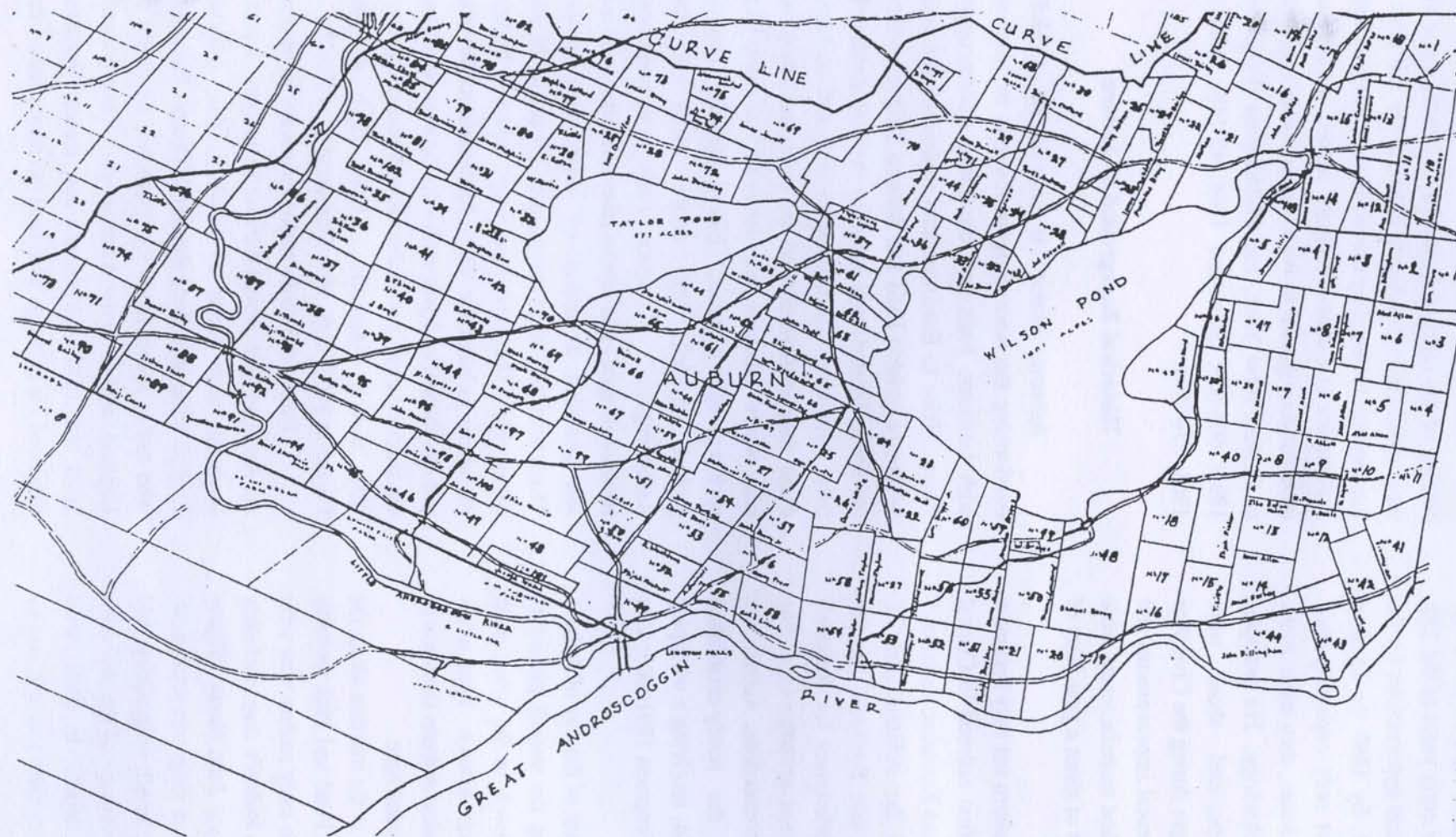
West Auburn begins at the marshes along the western boundary of Wilson Pond and runs westerly to the Minot line. Many of the early settlers who were here in 1798 are recorded on Bullen's map, including James Parker, Israel Bray, and John Nason (Figure 4). Its location on an elevated ridge attracted newcomers, and by 1810 the small community had developed. Citizens took advantage of the saw mill, blacksmith shop, and stage depot. In 1842, West Auburn hosted the first Auburn town meeting, and by

1850 was home to a number of shoe shops. While the coming of the railroad in the 1840s caused some of these small firms to relocate closer to the rail lines, the loss was lessened by the increased interest in and exploitation of orchard farming. Indeed, apples and other produce grown in West Auburn were exported to Boston, New York, and Philadelphia (Ferguson 1891: 608-609; Stanwood 1864:145-148; Skinner 1968: 274-275).

### Historical Background of Auburn

Auburn, Maine, is situated on a bluff overlooking the Androscoggin River at its junction with Lewiston Falls and the Little Androscoggin River. Prior to EuroAmerican settlement, the area between Lewiston Falls and Auburn Heights (where the site is located) was home to the Anasgunticook tribe. Historical documentation and oral tradition detail their exploitation of the river and adjoining hills, where "Massive pines formed a vast forest [,] a perfect paradise of game." Indeed, the tribe's hunting ground covered "the entire valley of the Androscoggin." Lewiston Falls - a traditional rendezvous spot - and nearby lakes abounded with fish and provided a source of clear, pure water. "Androscoggin" itself means place for preparing and curing fish. The view from atop Auburn's highest elevations includes the White Mountains to the west and the Kennebec River valley to the east, and gave the Native Americans unobstructed views of the river from several directions. (Elder 1891: 45, 46; Ferguson 1891: 600, 601; Skinner et al. 1968: 2).

Unlike the other major riverways in Maine, the Androscoggin proved difficult to navigate, and the lowlands were prone to flooding, thus delaying English settlement along the river. Thomas Purchase, who got a patent from the Plymouth Company in England, settled on the Androscoggin River between 1628 and 1632. A farmer and trader, Purchase expanded his holdings with land purchases from local



**Figure 4.** Philip Bullen map of 1798 showing the early settlers in what would become Auburn, Maine. (Scale: 3 in. = 2 miles [3.2 km]. North is at right side of map.) Samuel Berry's lot (48) was east of Wilson's pond (now Lake Auburn) in the Bridgham grant. The Keene-Hayes property (lots 48, 101) was west of the junction of the Great and Little Androscoggin Rivers in the Bakerstown grant.

Native Americans. However, there is evidence that he did not deal fairly with the Indians, and when King Phillip's War broke out, his buildings were destroyed. Purchase spent the rest of his life in Massachusetts, and when he died in Lynn on May 1, 1678, his property – including that in Maine – was divided among his wife and children.

A Boston merchant, Richard Wharton, bought the land from the Purchase family in July 1638 for one hundred and fifty pounds. Not content with this acreage, Wharton negotiated with Warumbee, the Anasgunticook leader, and other tribal leaders for yet more land in 1684. This purchase included:

“[A]ll lands lying four miles westward from the uppermost Falls on said Androscoggin River to Maquoit in Casco Bay, and on the Lands on the other side of said Androscoggin River from above said Falls down to Pejepscot ....”

Upon Wharton's death, the lands passed to a Boston group known as the Pejepscot Proprietors. Part of this claim became known as Danville, and was later annexed to Auburn (Elder 1891: 47, 56-59; Skinner et al., 1968: 6).

Tensions between new settlers and the Native Americans were high, however. The Anasgunticooks had fought on the side of tribes supporting King Phillip in 1675/76, and continued to have ambivalent feelings towards the colonials after peace was declared. When King William's War broke out, Warumbee's warriors attacked settlers in the Androscoggin Valley “with ferociousness.” In retaliation, Major Benjamin Church attacked the Anasgunticook in 1690. The village was the tribe's chief stronghold, and served as a refuge for tribal members displaced by growing white settlement in the region. Church succeeded in killing several men and burning their corn, but his only real accomplishment during the raid was rescuing five English captives.

Indeed, Sequin claims that the only reason Church was able to get into the village was because Warumbee was trading furs in Biddeford. Continued warfare, however, splintered the tribe into a number of smaller groups, many of whom went to Canada to form part of the St. Francis tribe. Skinner reports that in 1768, there were only five tribal members left.

However, another century of conflict would ensue before inland areas were considered safe for settlement (Elder 1891: 47-49; Sequin n.d.: 4; Skinner et al. 1968: 1, 7).

Between 1763 and 1842, a series of land grants and deeds delineated that area that now comprises Auburn. The city was originally part of Bakerstown – a large tract of land encompassing what are today the towns of Poland and Minot and including Marston's Corner in Auburn and Danville, a portion of the Pejepscot claim. Early settlers cleared land along the highlands, where they found rich soils for gardening, farming, and raising fruits. Potatoes and apples were grown for market, while wheat and rye remained the staple crops in the region. Samuel Berry built the first gristmill on a “large lot containing the outlet and mills and stretching nearly to the Androscoggin” (Lot 48 east of Wilson Pond on the Bullen map, Figure 4). Berry's home was also the site of the first school, which was started in 1798. Other early buildings included the sawmill (1792/93) and a second gristmill, constructed in 1798/99 (Ferguson 1891: 600-601; Little G. 1891: 691-692; Little J. 1823: 1, 3; Merrill 1891: 716, 718; Skinner et al. 1968: 7; Stanwood 1864: 145; Szewczyk 2000b).

On February 17, 1795, Bakerstown was incorporated as the Town of Poland by order of the Massachusetts General Court, and became the 92<sup>nd</sup> town in Maine. Philip Bullen surveyed more than 18,000 acres between August and October 1798. Martha Ballard's husband, Ephraim, assisted him in the field. Her diary entry for August 20, 1798 reads in part: “mr. Ballard, P. Bullin and Jon<sup>s</sup> Brown Sett

out for Poland to perform a Tour of Surveying by the appointment of the Genl Coart. They left our house at 4<sup>h</sup> pm." Ephraim returned home on October 27<sup>th</sup>, but did not receive compensation for his work until January 1799 (McCausland & McCausland 1992: 454, 461, 467). The Keene-Hayes site is located on Lot 48, a tract of land situated to the west of the Little Androscoggin River within the boundaries of the original Bakerstown grant (Figure 4). Lot 101, owned by Joseph Welch in 1798, served as the boundary with Danville; in later years, the Keene family built its barn here (Chadbourn 1955: 425-426; Cumberland County Deeds, Book 171: 97; Ferguson 1891:602; Merrill 1891: 725; Szewczyk 2000a).

More divisions followed, with the northeastern section of Poland splitting off as the Town of Minot on February 18, 1802. Residents in Minot, however, felt "much incommoded" with town services, and in June 1841, sent a petition to the Senate and House of Representatives requesting "that a new Town ... be formed, including a small part of Danville." The town of Auburn, an area encompassing "all that part of Minot lying easterly of the curve line" was incorporated from this division, and what would become the Keene-Hayes site was now located within its boundaries.<sup>4</sup> By 1859, a small portion of Danville lying north of the Androscoggin River was added to the town's limits, thus joining portions of the Pejepscot and Bakerstown grants (Chadbourn 1955: 317-319; Little 1823; Ferguson 1891: 603; Merrill 1891: 757; Skinner et al. 1968: 17; Szewczyk 2000a).

### Archaeology As Education

The integrity of the work on the Keene-Hayes site has helped to make it a model program for other schools. The service-learning model (KIDS as Planners) that served as a framework for curriculum development is one that encourages students to take ownership of a project and play a pivotal role in its

development and implementation. Classroom and fieldwork is intimately linked to the Maine Learning Results, the framework that defines what students should learn during their academic careers and beyond. Yet, what does this project say about the efficacy of archaeology as an educational tool?

The partnership with adult experts certainly helped the students learn - and apply - basic archaeological methods and skills (Figure 5). But there was much more happening at the Keene-Hayes site. The students who were involved in this dig, the ones who had been labeled as "at risk" or as academic "failures," were now excelling. These young men and women learned how to work cooperatively and make new friends. They assisted each other in the field, gave presentations to school administrators, professional archaeological groups, the general public, and their peers; created PowerPoint slide shows highlighting their work; and began a scrapbook to document site work. As they talked about "their" project, they spoke with pride of "doing archaeology," of understanding the concepts and methodologies which define the field. Four students have expressed interest in becoming professional archaeologists, while a fifth student is interested in pursuing a career in preservation law.

What makes this experience so noteworthy is that these students - the ones many thought would fail - successfully advocated to continue the project after the 1999-2000 school year ended. To do so, they worked with guidance counselors, the principal, and the curriculum coordinator at the high school to change the course schedule. Often, their participation has meant giving up their study hour so they can be in the field. The adult administrators challenged the "dig team" to improve their overall grades as a prerequisite to continued project participation, and these students worked hard to increase their grade point average.

As well, students who have worked on the dig have expressed an increased interest in history,



**Figure 5.** Edward Little High School students at work on the Keene-Hayes house site. The excavation unit frames an area that had once been underneath the kitchen window. In the background, students work in the foundation of the home's interior.

participating in re-enactments and assisting on other digs (they spent an afternoon working at Pemaquid). An open house held in the spring of 2001 not only resulted in a parent-student "Dig Day," but was the first time some family members had been involved in school activities. Community members and the media were invited to visit the site; reporters interviewed the students as they excavated, and a clip was shown on the evening news.

Their pride in their accomplishments is palpable. When you ask them, the Edward Little archaeology students can relate what they have learned in the field by working on this project to subjects across the curriculum. For example:

- Brainstorming research questions and planning the excavation allowed students to use analytical and critical thinking skills;
- Interest in pursuing a future in archaeology has impacted students' Career Preparation work;

- Measuring and laying out the units, applying the principles of triangulation, and mapping to scale expanded the application of mathematical principles;
- Visual and Performing Arts abilities have been enhanced through pottery and glass analysis;
- Students gained proficiency in English as they kept journals and wrote reports relating the artifacts to the Keene family and contemporary lifestyles;
- Lessons in soil analysis as well as work cleaning metal artifacts have expanded scientific learning.

In all, this has been a positive experience for all of us. Moreover, the Keene-Hayes site has the potential to serve as a model for other archaeological work with students. Indeed, as they plan for the future of the site, these students talk about developing a museum and teaching center for their peers across the state. And, of course, they talk about becoming the next generation of archaeologists.

### The Keene-Hayes Site and Barbara Luedtke

So how, you may well be asking, is the excavation of a 19th century farmhouse in Auburn, Maine tied to Barbara Luedtke? The answer is simple, if not immediately apparent.

I can think of no greater tribute to give an educator than that she inspired her students to fly, to feel passionate about a field of study. And that was Barbara's gift to me. She helped me get my first paper published, supported my desire to link archaeology with education, and assisted me in that endeavor by reading drafts of lesson plans, lending curriculum materials and artifacts for presentations and teacher workshops, and sharing her extensive know-how. She was patient, and knew how to listen. And she inspired me to look at archaeology in whole new ways.

Barbara was committed to helping the field grow, and as we - her students - pass that passion to a new generation, we are helping to keep her dream alive. As one student on the project noted:

"Archaeology is not as easy as it looks. It's much more than just digging in the dirt. So the next time you pass by or hear something about archaeology, take a step back and see what it's really about. Who knows, it may be personally tied to you."

### Acknowledgements

The author would like to thank the teachers at Edward Little High - Sara Caron and Keith Bran - for the opportunity to work on this project. Thanks also go to Shiho Burnham, Pamela Crane, and Peter Morrison, who have given so selflessly to make the dig experience such a rewarding one for the students, and to Lori Twiss, whose vision and dedication continues to be an inspiration. Norman Buttrick was especially supportive in his Evaluation Report on the Keene-Hayes Site, 2002, for the Maine Humanities Council, and felt that the project had a high degree of academic integrity. Finally, my heartfelt affection goes to the students; as they themselves would say, "It's been great!"

### ENDNOTES

1. Funding for the ELF Woods project, including the archaeological dig, was provided by KIDS Consortium through the Corporation for National Service and the Kellogg Foundation. An award from the Maine Humanities Foundation provided funding for the archaeological component of the ELF Woods program. The Consortium's service-learning model, KIDS as Planners, served as the basis for academic work.
2. Family deeds spell Keen with or without an "e"; Adin's sons seem to have adopted the "Keene" spelling.
3. His father was also a shoemaker, and Herbert seems to have followed in his footsteps.
4. Auburn received its name from Mrs. James Goff, who turned for inspiration to a poem, *The Deserted Village*, written by Oliver Goldsmith in 1770. The opening line begins: "Sweet Auburn! Loveliest village of the plain..." (Chadbourne 1955: 440; Skinner et al. 1968: 10). Mrs. Goff's husband, James, was both a prominent Auburn settler and the legislator who sponsored the bill to incorporate Auburn. David Colby Young, [www.rootsweb.com/~meandrhs/0297.html](http://www.rootsweb.com/~meandrhs/0297.html).

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