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The Tobey Site Revisited

Edwin C. Ballard

Introduction

The Tobey site is located in the village area of Rehoboth, MA, just south of the east-west segment of the Palmer River (Figure 1, Figure 7, A). The purpose of this article is twofold. The primary purpose is to meet an unfilled commitment from the Cohannet Chapter of the Massachusetts Archaeological Society (MAS) to provide an excavation report to the Tobey family. A secondary purpose, based on discussions with Joshua Tobey and my own personal interest, is understanding how the site fits into the prehistoric record.

My connection to excavation archaeology started in the summer of 1986. While I was walking the family dog along my south property line stone wall, Scooter stopped at the wall opening for the path onto my neighbor Paul Tobey’s property, raised his ears, sniffed the air, shot up the path and disappeared over the top of the glacial kame on Paul’s property. I followed him and found myself in the middle of an archaeological excavation in process by members of the Cohannet Chapter of MAS. I visited the excavation several times that summer. I joined the dig team the following summer, opening new squares and sifting the soil to junction. Over the next four and a half seasons I spent about 70 days in the dirt, gaining a respect for the organization and discipline of excavation.

Discussion

The Tobey site, as shown in Figure 1, is located about 300 meters south of the east-west flow path of the Palmer River on a glacial kame on the north side of an approximately 15,000 year-old moraine of the Buzzards Bay glacial lobe (personal observation, Smith 2016, Skehan 2001). The excavation was on an open area of the kame about 75 meters north of the moraine. The course of this moraine is traceable from the Blackstone River in East Providence, RI to Middleboro, MA, where it joins a recessional moraine of the Cape Cod lobe.

This western segment of the kame was relatively open, while the area to the east is covered by a dense stand of white pine. The west side of the kame and the northwest corner are bounded by a swamp. The west swamp is replenished by a year-round, spring-fed brook. The northern edge of the kame, east of the path to the river, is bounded by another swampy area; the height of the kame from the level of the swamps is about eight meters. The western edge and northwest corner of the kame contain several sandpits. The exposed junction of the soil overburden at present varies from ten to twenty centimeters in thickness.

When Mr. Tobey purchased the property, this area was under cultivation, which he allowed to continue for several years. During that time, after spring plowing people would request permission to walk the area in search of Native American artifacts. The project was initiated when the Tobey’s daughter found a group of stone points along the eroded upper surface of one of the sandpits. Through the town’s Historical Commission, the family contacted the MAS’s Bronson Museum in Attleboro, MA. During the initial evaluation, Brady Fitts of the Cohannet Chapter, one of the early principal investigators, examined the upper area of the sand pit and found stone chips and several additional points. Based on the evidence, an excavation project was initiated.

From an opening in a rough southeast-northwest stone wall segment at a boundary post, Brady ran a north-south transit line. Eight one-meter test pits were excavated at two meter intervals. Based on the artifact density, he established a zero point at the north end of the test pit and established an east-west line. The initial excavations were in the northwest quadrant (-A / -E, 1 through 6 and + A/ +E, 0 through 5 (see Figure 2). A total of 100 two-meter square pits were excavated during weekends from 1985 through the Fall of 1991. Sixty percent were on a north-northwest line from -A to -L 1 through 6 / 8, and a single square was exca-
vated in the extreme north-northwest section, at -Z 14. About 25% were in the southwest section of the northeast quadrant, and the balance were in the southeast quadrant with a concentration in the lower area +L / +O 4 through 8. There was no excavation in the southwest quadrant. This quadrant, which is closest to the spring, which suggests a primary area of habitation, was overlooked. A suggested reason for this was a forced closure of the Bronson Museum in Attleboro in 1987, which was the primary meeting place of the Cohannet Chapter, which occurred shortly after the initiation of the dig. The museum's artifact collections were placed in storage. Shortly before the end of the excavation, the museum was moved to Middleboro MA and renamed the Robbins Museum. The result of this disruption was clearly evident in the rapid fall-off in the dig crew size after 1987 to a working group of five or six for the last three years. The Cohannet Chapter effectively dissolved and the promised report was not completed.

During the excavation an additional test pit line was run from +A8 / +H8. The artifact finding suggested that the occupation area would extend further to the east, reinforcing the previous site extension hypothesis. Included in this small assemblage were two Levanna points. Only two additional Levannas were found in the major areas of excavation. One of these was in loam. The test pit Levannas are not included in the artifact data shown in Figure 3. Five C\(^{14}\) dates were recorded. The first, 4470±80 B.P., GX-27745; \(\delta^{13}C = -27.7;\) cal 5208, 5192, 5048 bp (Stuiver and Reimer 1998) was found in a hearth in square -A1. The area in the southeast corner of the north west dig area from -A 1-6 to -F1-6 had the highest artifact density on the site. Its most significant feature was feature 7A, centered in -C2. This was a circular presumed sweat lodge extending into several squares with an east-west diameter of 308 centimeters and a north-south diameter with a small entrance rectangle of about 20 centimeters extending the north-south line. The floor depth was about 150 centimeters; in the middle was a layer of burnt stones. A C\(^{14}\) date of 4710±60 B.P. (Beta-27934, no \(\delta^{13}C\) correction; cal 5356 5552 bp (CalPal 2007)) was found in a charcoal sample taken at 153 centimeters under the stone layer. Along the north wall segment, the floor was not completely excavated for the lower 45-50 centimeters, providing a seat for the occupant. The sand under the stone layer was dark red; the reddish intensity reduced, becoming more brownish at the base of the seat. The lower area of the inside walls was brown. There was no evidence of any covering of the upper walls near junction, suggesting that plowing may have eliminated any residual evidence. The plow zone at the site ranged from 3 to 20 centimeters. In the area of this feature, the plow zone was about 15 centimeters.

An additional C\(^{14}\) date of 4470±80 B.P. (GX-27743, \(\delta^{13}C = -27.7;\) cal 5208, 5192, 5048 bp (Stuiver and Reimer 1998)) was obtained from a hearth at +M 5/6. The lithic artifacts from this area included primarily Squibnocket and other small triangles, with a single Neville point. An assemblage of nine modified scrapers with rounded, highly polished, bulbous ends was found adjacent to the feature, suggesting the location was a hide processing area (see Figure 4). Only one flat scraper was evident. There were several significant features in the area between -A1/4 to -D1/4; they included a concentration of fire cracked rock along the northeast-southeast perimeter of the apparent sweat lodge. There were two grooved pestles, one broken and apparently tossed onto the ring of fire cracked rock. There were two smudge pits, a group of three hammerstones and an anvil. There was also an interesting heart-shaped concentration of undefined stone chippage. In a Spring 2017 discussion with Brady Fitts, he noted that there was also a small pile of roasted hickory nut shells adjacent to the chip concentration. Based on Brady’s observation of Jeff Boudreau while flintknapping, the chippage distribution that built up while knapping tools in this feature suggested that a site occupant was munching on hickory nuts while making points.

Two additional C\(^{14}\) dates were found. One is from a small shallow, circular stone lined hearth (Figure 16) at the junction of -I4/5, -J4/5. The C\(^{14}\) date was 3630±70 B.P., Beta-27835, no \(\delta^{13}C\) correction; cal 3866 4062 bp (CalPal 2007); a Stark point was found in the charcoal of this feature. An additional Stark point was found in the one-half meter charcoal stained area around the hearth. An additional small hearth (Feature 10) with a C\(^{14}\) date of 3730±80 B.P. (GX-27744; \(\delta^{13}C = -26.0;\) cal 4088 bp (Stuiver and Reimer 1998)) was found in the upper right section of square -J4. Adjacent to Feature 10...
was a two-centimeter vertical post stain. The area from -H, -I, -J, -K5-7 had a concentration of drills and gravers. A curved line of fire cracked rock extended through several squares in the -H 5/6 area, similar to the grouping adjacent to the apparent sweat lodge Feature 7A, suggesting the possibility of an additional sweat lodge in the unexcavated area to the west.

About one half of the Stark points found on the site were at the working levels of Features 16 and 10, south of Feature 7A (see Figure 5). A post-dig analysis session with Jeff Boudreau verified that the two points found in Feature 16 were Starks. Jeff reclassified four of the other close by Stark points as Poplar Island, a type best known from eastern Pennsylvania (Boudreau 2017; see Figure 6). The standard Stark rounded tapered base had been changed to show an inverted curve at the base tip. During an additional session with Jeff, the ca. 65 Small Stem points from the site were observed under magnification, and two-thirds showed secondary usage. We had planned for an additional session to determine if there was any significant difference between the primary and secondary usage points. In other words, were the secondary usage points rejected as weapons points? Unfortunately, Jeff passed away before we could complete that project. Jeff also reclassified two of the Small Stems, one as a Fox Creek and the other as a Jack’s Reef. The balance of the Starks and the distribution of Neville points were found in the southeast section of the northwest quadrant within +2 to 3 cm of the -30 cm working level of the hearth in -A1 (Feature 1).

An area in the southwest corner of the northeast quadrant from +A0/5 to +E0/5 had a smudge pit and a concentrated area of scrapers and knives. There was also an enigmatic feature from +A2 to +E2, a two centimeter wide stain at twenty meters below junction; several places along the length of the stain showed a bulge of about four centimeters. One of these was excavated to a depth of forty centimeters and appeared to be some kind of a supporting stick. Close examination of the stain showed an apparent linear longitudinal gradient; a cross section showed a similar type of discontinuity but very, very short in nature. This suggests a possible length of braided reeds with small forked branch elements to keep the stick in place (Fitts, 2017).

In addition to the lithics there was a significant presence of bone. A concentration of bird bone was found in the area of Feature One. Other types of bone included deer, possible snapping turtle and small animal. A sample sent to Dr. Nicholas Bellantoni was verified as deer and turtle (2002). A larger sample was analyzed in a report by Tonya Largy (to be published in 2018 - ed.). This report verified the concentration of deer bone in three locations in the northwest quadrant: one in the area of Feature 1, a second 2/3rds of the way between Feature 1 and Feature 16, and a third in the southeast quadrant in the area of +V, W 2 - 3. There was also a significant distribution of animal bone. One set of samples was possibly woodchuck. There was scattered bird bone, including both smaller birds and turkey. Bone from several locations was confirmed as turtle bone. Flotation samples from Features 10 and 1 were analyzed by Tonya Largy (2017). The sample from Feature 10 was oak, suggesting a hot fire, and several hazelnut shell fragments were also present. The sample from Feature 1 showed the presence of birch in multiple sizes. The elements from small size birch family brush showed evidence of green bark, suggesting late seasonal Fall activity; there was an incomplete combustion, suggesting a low intensity fire to generate smoke. The aforementioned evidence of roasted hickory nutshell at the knapping locus, in conjunction with the flotation data and the presence of animal bone, suggests the site was used as a primarily Fall season hunting site.

After the close of excavations in late 1991 I joined the Saturday staff at the Robbins Museum in Middleboro, MA. During the early years I assisted Tom Lux, who had succeeded Brady Fitts as principal investigator in 1989, in the analysis of the Tobey site data. After my retirement in 1998 I joined the Wednesday working group at the museum. That group was responsible for the operation of the museum. In my free time I continued to support Tom in analysis of the Tobey site data, until he suddenly passed away and those records disappeared. Several years later, they were found in a container behind his desk, restarting the Tobey site data analysis project.
How Does the Tobey Site Fit?

At the completion of the report there was an obvious connection between several Native American ceremonial sites and the adjacent habitation associated with the location of the Tobey site. These observations add a new dimension to the focus of this article. My initial exposure to archaeology occurred in the spring in 1983 when I went on a field trip sponsored by the New England Antiquities Research Association in which we observed several interesting enigmatic stone constructions. I later discovered that I had walked into a 70 plus-year controversy relating to the nature of the enigmatic constructions. I continued field research in this area, and in the Fall of 1989 I walked a site that contained an array of horizon-oriented U-shaped laid-up stone constructions that appeared to be related to the yearly Sun cycle. This was confirmed on 12/22/89. While kneeling in a U-construction that faces southeast, I photographed the winter solstice sunrise as it broke the horizon at the base of a canted, chocked, in-place standing stone foresite. This was precisely two minutes after the listed horizon sunrise time. I continued my investigations through 2009. The results were documented both in publications (Ballard 1999, 2014, Ballard and Mavor 2010) and in oral presentations to the Northeastern Anthropological Association (1992) and the Eastern States Archaeological Federation.

During the intervening years I spent a significant amount of time becoming knowledgeable about the Museum’s displays and inventory, using as resources MAS publications, and the museum’s library and exhibits. One of these resources was its collection of Massachusetts topographic maps which showed the recorded locations of known Native American sites. The Rehoboth area detail was primarily on two quadrangle maps (East Providence, RI and Somerset, MA). These included the geographic area from upper Narragansett Bay including parts of East Providence, RI, and Seekonk, Rehoboth, Dighton, Swansea, Somerset and Berkley, MA. There were twelve significant activity areas along the lower Palmer River in Rehoboth and the west bank of the Taunton River, nine activity areas from Sweet’s Knoll in Dighton through Somerset. The accompanying index card data for the Palmer River sites indicated that they had been recorded in 1939 by Mr. Milton Hall. Milt was a resident of the town of Rehoboth, one of the original members of the MAS and one of the founders of the Bronson Museum. After his death, the family donated his lithic collection and documentation to the MAS, except for a small sample that went to the Carpenter Museum in Rehoboth. I made myself familiar with its contents, but was stymied because I was initially unable to break his location code.

Starting in the summer of 2013, things began to fall in place. A Rehoboth resident, Bill Swallow, brought his extensive artifact collection to the Robbins Museum for evaluation. For years he had walked local landscapes and participated in several excavations. The bulk of his collection came from a site about 2,500 meters west of the Tobey site along the south bank of Fuller’s Brook before it turns south and empties into the Palmer River at Summer Street, in an area where the Palmer River broke through the glacial moraine and headed south (Figure 7, B). The area was near the property of his grandmother. When he found the property along the brook was about to be developed, he contacted the developer and got permission to do a salvage dig. The site was gridded and each excavator was directed to find a square. The excavators were entitled to any artifacts they found. During our discussion, Bill indicated that they had unearthed 15 hearths; one of those in his area turned out to be a stack of three, one on top of the other. One of the other diggers obtained a C14 date from a hearth in his zone of ca 3600 B.P. (no further information is available). This is similar to the dating of Features 16 and 10 at the Tobey site and is a clear first connection. Unfortunately, some of the artifacts in Bill’s collection included artifacts from other areas. However, the bulk of the lithics were of the Transitional Archaic / Early / Middle Woodland eras, similar to the Tobey site. Several years earlier, Bob Sharples, also a former MAS member, had shown me a pair of Neville points that he had found while surface walking in the general area of the dig, suggesting that some of the earlier artifacts in Bill’s collection were probably from this dig site. Reviewing the Robbins topographic map data from Mr. Hall’s notes, one of the locations he referenced was along Fuller’s Brook about 100 meters west of Bill Swallow’s dig site. With that concurrence, I was able to break
Milt Hall’s location code and identify the location of four of the twelve lower Palmer River sites. We were able to determine that about 100 of the 800 artifacts in Milt Hall’s collection had come from these four sites. These points were from the Transitional Archaic through Middle Woodland. In 2016, a collection of about 100 points from the area of one of the twelve locations recorded by Mr. Hall was donated to the Carpenter Museum. The points were surface finds; over 50% were small triangles and the balance were from the Transitional Archaic through Woodland, except for a single Neville and a dentate stamp.

In the spring of 2014 the MAS received a letter from the daughter of a former Dighton resident, Mr. Edward Rose, who had an extensive collection of lithics from the west bank of the Taunton River (Figure 7, D), just south of Sweet’s Knoll (Figure 7, E) and opposite Grass Island (Figure 7, F). Two of the museum’s working staff flew to California and drove the collection back to the Robbins. They were unable to obtain any documentation with the collection. Mr. Rose had excavated on the site for about twenty-five years. After he moved to California he returned to Dighton for one month every summer to continue excavation for many years. Mr. Rose documented his findings in two Bulletins of the Massachusetts Archaeological Society (Rose 1953, 1965). An article in the Fall 2015 Bulletin of the Massachusetts Archaeological Society (Bello 2015) details the collection’s contents. The lithics extend from a small sample of Paleo points extending through the Woodland periods, with a concentration starting from Late - Transitional Archaic to Middle/Late Woodland Periods, based on comparative typology since no C14 data was available.

The similarity of location of these three sites, which were all just on the south side of the moraine at or near the end of the east-west flow segment of both the Palmer and Taunton Rivers, caught my attention. I have worked for several years on a drinking water well mapping project in Rehoboth. Coupled with my surface archaeology experience, I have gained an understanding of both the bedrock and glacial geology of the area from Narragansett Bay east to Middleboro (Skehan 2001). The bedrock runs in a waveform pattern with a north-south strike. The difference in height from the base of the anticlines to the top of the synclines runs from about 100 to 300 feet in a continuous wave pattern. The north-south flow of glacial ice swept the area clean of 250 million years of debris. As the glaciers receded, they left behind deposits of sand, gravel, and boulders. In Rehoboth, the soil overburden ranges from 120 feet in the anticlines to 5 feet on the tops of the synclines. In the area from Narragansett Bay to Middleboro, the rivers flow north-south until they are deflected by the moraine; after the breakthrough they continue north-south in the anticlinal valleys.

There are several other recorded excavations between Seekonk and Middleboro with similar geographic locations. The Read Farm site in Seekonk, MA (Figure 7, C) was a 110-acre property overlooking the Running River. It is on a relatively level stretch of land on the east side of the junction of the Running River with One Hundred Acre Cove about 7,000 meters south of the moraine. The Bear Swamp site in Berkeley (Figure 7, G) is on the north side of the moraine above the east bank of the Taunton River opposite Sweet’s Knoll. The Wapannucket site in Middleboro (Figure 7, H) runs along the north shore of Assawompset Pond, the Nemasket River runs north from the pond for several miles until it joins the Taunton River. All these sites are in the anticlinal valleys with fertile alluvial river banks and spring fish runs which continue to this day.

The Read Farm site excavation in Seekonk, MA was the subject of an article in the Bulletin of the MAS in the fall of 1985 (Johnson and Mahlstedt 1985). C14 dates of 3475±70 B.P. (UGa-921) and 3145±65 B.P. (UGa-922) were found (Barnes 2016). Comparative lithic typology data suggests a possible Middle Archaic to Middle Woodland Period occupational presence.

There were two excavations at the Bear Swamp site in Berkley, MA. The first (Bear Swamp One) was reported in the Bulletin of the Massachusetts Archaeological Society (Staples and Athearn 1969). It is on the north side of a glacial kame, similar to the Tobey site. Its main features were twenty pits. Several were used as residences. Of the others, one was a burial site and the other was a possible burial of collection of cremation residue (packed fine char). Two C14 dates were obtained (4640±80 B.P., Y-2499, and 4145±65 B.P., UGa-389). The site
overlooked a swampy area. Bear Swamp Two was on the opposite side of the swamp. Several C\textsuperscript{14} dates were found (4180±75 B.P., UGa-386; 4080±85 B.P., UGa-913; 3520±180 B.P., GX-2418; 3445±80 B.P., UGa-387; and 2210±70 B.P., UGa-388) (Barnes 1972). Artifacts at both sites were similar, belonging to what Barnes referred to as the Squibnocket culture.

Continuing east, the Wapanucket site is in the alluvial plain on the north shore of Assawompsett pond south of the road between the beginning of the Nemasket River as it exits the northwest corner of the pond and a cemetery. Over an extensive period of years ending in the early 1980’s, seven excavations were conducted at this site as reported by Dr. Maurice Robbins (1980). A C\textsuperscript{14} date of 4720±140 B.P. (M-1350) was found during the Wapanucket 8 excavation. The range of artifacts was extensive and included two separate Paleo loci, both consisting of fluted points. One was based on surface finds in the beach area south of site number 8; the other was an excavation find of several fluted points in the Site 8 excavation area itself. There are about 6,000 artifacts from Wapanucket in the Museum’s inventory, out of a reported total of about 14,000. Based on comparative typology, they range from Paleo through the Early/Middle Woodland periods (Fitts 2017). The most significant find was a habitation complex extending from the south end of Site 6 through Site 8 almost to the end of its southern boundary. This consisted of several circles of vertical post hole patterns with an entrance area on the outside of the circle, similar to the outside of a snail shell. In the center of the circles were vertical poles suggesting roof supports. There were two large structures, one in Site 6 the other at the southern end of Site 8; these had two entrances on opposite sides. In between the large structures were several smaller size units, perhaps for extended families. Adjacent to one of the structures was a bundle of sections of bark, suggesting that bark was used for the external covering of the outside walls. There were no hearths inside the structures. These were external and adjacent to the structures. Several C\textsuperscript{14} dates were extracted from the hearths: 3550±130 B.P. (M-1212), 3,610±130 B.P. (M-1213), 3655±55 B.P. (UGa-860), and 3765±65 B.P. (UGa-1412) (Robbins 1980).

On the first terrace at the Middleboro Little League site (Figure 8, I), which sits on the edge of a kame terrace facing southwest about 3 km north of Wapanucket, a pit feature dated to 3400±110 B.P. (GX-33768, Hoffman 2014) was found; it contained a lobate stemmed point interpreted at the time of excavation as a Rossville or Stark, but on comparison with the Tobey Site recoveries it can comfortably be reassigned to the Poplar Island type. Other dated features on this terrace ranged in age from early Late Archaic through early Late Woodland, and the typology ranged from Squibnocket Triangles, Small Stemmed points, and Atlantic points to Late Woodland Madison points.

The concentration of C\textsuperscript{14} dates in the areas discussed above is interesting. They bracket a major cold climate event from 4200 to 4000 BP (Schlesier 1987) that caused the migration of proto-Algonquians southwards. In the mid-continent, the Blackfeet and related tribes retreated from Alberta through Saskatchewan to the northern plains, bringing their sky-based Medicine Wheels with them. The Cheyenne migrated south through Manitoba into the Dakotas and east to Minnesota and later back to the plains. The Cheyenne’s major annual cultural event was the Massaum ceremony, which was controlled by the dawn rise of several stars. Its altar was a U facing east (Schlesier 1987).

Perhaps around the same time, the Lenape moved south via the Hudson River corridor to Delaware. Delaware oral history notes that they came from an area where there were no tides. In the 1600s, after the Pequot War, they migrated west over the Alleghenies to eastern Ohio. In the early 1800s they were forced by the federal government to move further west because they chose to retain their sky-based culture rather than converting to Christianity. In the later 1800s the record shows that their January mid-winter Big House ceremony contained elements of moonrise and the Bear constellation, which was visible through the roof of the structure. An image of the constellation we call the Big Dipper, consisting of 3 hunters and the bear, was drawn on the floor of the lodge, and the ceremonial meal was bear meat. (Schlesier 1987, Speck 1931)
The lithic data from Massachusetts shows a distinctive change in point types between 4500 and 3600 B.P., suggesting some type of cultural change during that period. The presence of Poplar Island points at the Tobey site suggest a possible trade route expansion at this time – or, it could simply be that this type is underrecognized in the region, since all of the examples from the Tobey Site are made of local lithic materials.

Afterword

This brief description satisfies the initial objectives of the original report. Plotting the data regionally shows some interesting observations that support the hypothesis of the use of certain surface stone constructions to augment the oral memory of the sky-based elements of indigenous culture. On the high ground synclines from Seekonk to Middleboro there are six Native American ceremonial sites. The map in Figure 7 shows the habitation site locations as circles and the ceremonial site locations as triangles. The first two (Figure 7, K and L) are U-construct sites on the Dighton Syncline which separates the Palmer River and lower Taunton River habitation sites. The first one is in northeast Rehoboth. This site is named DTR 1b (Ballard 1999, 2014). The summer solstice and equinox sunset U’s on this site overlook an array of stone piles. During sand and gravel removal operations that supported a nearby Nike missile construction area, one of the stone piles was removed. It contained a Native American burial. The remains were quietly reburied (Sharples 2003). The U-construct on the eastern edge of the syncline at DTR 1a included my initial recording of winter solstice sunrise 12/22/89. Between the lower Taunton River and Wapanucket on the high ground syncline in Lakeville, the ceremonial site consists of a boulder circle of stones with boulder lines extending along significant solar sunrise azimuths (Leonard, 2010). A third U-construct site is on the high ground between Wapanucket and Rock Village in Middleboro, south of Walnut Street (Figure 7, O) (Ballard 1999, 2014). A fifth site apparently existed on the top of a drumlin on Assawompset Neck overlooking Wapanucket (Figure 7, N). Before King Philip’s War, Tispaquin deeded the drumlin area to three male members of his extended family. After King Philip’s War this area became one of the largest Native American habitation sites in southeastern MA (Leonard 2010). In 1690, in order to prevent the Native Americans from using the hill for celebration events, the Middleboro selectmen took the site by eminent domain and leveled the top four acres of the drumlin (Leonard 2010).

After Contact to the present, these alluvial riverine areas became prime agricultural sites. The lithic record of the pre-Contact Middle and Late Woodland Periods were impacted by the plow. The lithic contents were widely dispersed into the private collections of the surface hunters who followed the plow. This has further limited our ability to define local Native American culture, which is already ill-defined due to archaeologists relying only on excavations in trying to understand what is primarily a sky-based culture. The record shows a three witnesses to our hypothesis. The first of these is in the writings of Roger Williams (1643):

They are punctuall in measuring their Day by the Sunne, and their Night by the Moon and the Starres, and their lying much abroad in the ayre; and so living in the open fields, occasioneth even the youngest amongst them to be very observant of those Heavenly Lights. . . By occasion of their frequent lying in the Fields and Woods, they much observe the Starres, and their very children can give Names to many of them, and observe their Motions. . . And know their Course and therein doe Excell the English tame.

Second, Snow (1996) states that the Iroquois observed the Pleiades and timed their midwinter ceremony to its highest point in the sky. The third is a pair of C14 dates of 800±50 B.P. and 860±50 B.P. for two of the four U-constructions at the Mouscosuck Creek site in West Barrington RI, the southern tip of the Seekonk, MA syncline (Figure 7, J) (Ballard 1999). Applying the principles of comparative typology to the U-construct ceremonial sites discussed above augments the hypothesis. Hopefully accepting the evidence will provide permission for researchers to broaden the study of the sky-based nature of prehistoric Native American cultures in the Northeast.
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Figure 1: Brady Fitts' Original Contour Map of the Area around the Tobey Site
Figure 2: Layout of Excavation Units at the Tobey Site
### Artifact Inventory (844)

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**Figure Three: List of Artifacts Recovered at the Tobey Site**

**Figure 4: Sandstone Scrapers from the Tobey Site**
Figure 5: Sample of Stark Points: A-C – Quartzite; D, E – Argillite

Figure 6: Sample of Poplar Island Points: A – Quartzite; B – Hornfels; C, D – Ledite; E, F – Argillite
Figure 7: Area Map Showing Sites Mentioned in the Text
Analysis of Flotation Samples from Features 1 and 10
Tobey Site, Rehoboth, Massachusetts

Tonya Lardy, Archaeobotany Consultant

Introduction

Flotation samples from two features (Feature 1 and Feature 10) excavated at the Tobey site by the Cohannet chapter of the Massachusetts Archaeological Society were submitted for analysis. Two radiocarbon dates were obtained on charcoal from the features from Geochron Laboratories (Ballard 2002). Feature 1 returned a date of 4470±80 B.P. (δ13C corrected, calibrated 5093±206 BP). Feature 10 was dated at 3730±80 B.P. (δ13C corrected, calibrated 4088±130 BP). These dates place these features in the Late Archaic period.

Analytical Methods

All materials were examined under magnification ranging from 5X to 280X using a Wild M3Zoom stereomicroscope and double fiber-optic lighting. Specimens were manipulated with “feather-light” forceps. Wood fragments were snapped manually to obtain a cleaner cross-section in order to view diagnostic anatomical features. Materials were weighed on an A and D digital scale to the nearest one-hundredth of a gram.

Wood samples were placed in plastic zip-lock bags. Samples from Feature 1 were placed in a cardboard box to protect them from crushing. Provenience information was written on acid-free paper labels and placed in the bags with the specimens. Small items such as fragments of bark and nutshell were packaged in hard plastic microtubes along with small acid-free tags bearing the identification of the specimen.

Wood identifications were made using manuals (Panshin and de Zeeuw 1970; Core, Cote, and Day 1979) as well as my recollection of charred wood. I also field-checked the bark on older trees and shrubs of alder and American hornbeam.

Wood fragments shown on Table 1 represent a sample removed as voucher specimens for identification. They were weighed rather than counted since one charcoal fragment results in a count of two or more after being broken during analysis. Also, wood charcoal may continue to break up after being excavated and transported. Although the same may be true for nutshell, these fragments are both counted and weighed. Weight as compared with count indicates the degree of fragmentation or size. Seeds are not weighed since weight is negligible.

Rate of Recovery

Poppy seeds (N=10) were added to each 400-mililiter bulk sample prior to flotation as a control to gauge the recovery rate for seeds and other small specimens. Four poppy seeds were recovered from Feature 1, representing a 40% rate of recovery. Six poppy seeds were recovered from Feature 10, representing a 60% recovery. One of these, from Feature 1, was found in the heavy fraction 2.00 mm screen. The rest were found in the light fraction 1.00 mm and 0.5-0 mm screens.

Results

The samples are composed almost entirely of charred wood and bark. No charred or uncharred seeds were noted in either sample except for one small charred fragment from Feature 10 which resembles a seed coat. Nutshell is present in a very small quantity and is discussed below. Also, I saw no evidence of calcined bone or other fauna in any of the fractions from either feature, although calcined bone was recovered from Feature 1. All plant taxa from both features are shown in Table 1.
Feature 1

Wood
The wood from Feature 1 appears to be homogeneous; i.e., all one species consisting of small rounds from limbs measuring 0.25 cm and 2.00 cm in diameter. This suggests that shrub wood was selected for burning. The taxon is betulaceae (birch family). Two genera in this family, *Alnus* (alder) and *Carpinus caroliniana* (American hornbeam) strongly resemble each other, possessing diffuse-porous vessel distribution with both narrow and broad rays and Y-shaped pith. This pith configuration is present in all genera within the birch family. The fragments strongly resemble charred alder in my reference collection, but certain fragments have characteristics of American hornbeam. A more precise identification requires a microscope with higher magnification and a greater investment of time, so I have offered both possibilities based on the analytical methods described. More work needs to be done when access to a different microscope can be arranged.

The degree of preservation of complete rounds of wood in the feature suggests the fire may have been a low oxygen fire for smoking, which would contribute to wood being preserved closer to its original condition rather than being consumed more completely in a higher temperature fire.

Bark
Two types of bark, one thick and one thin, are present. A sample of these were removed for study. Both alder and hornbeam have smooth, thin bark markedly different from the thick bark present in the feature. This raises the question of whether the pit may have been lined with thick bark, or perhaps it was used to kindle the fire or was added as part of the fuel.

Seasonality
Charred bark found adhering to wood provides information regarding the season the wood stopped growing. Many fragments (2.81 grams) in Feature 1 were removed as being good diagnostic pieces to observe these data. All fragments show that the tree stopped growing some time between late summer through winter. Trees typically stop growing in late summer, rest through fall and winter, and resume growth in the early spring. Assuming the tree/shrub was collected while still alive, this suggests a time frame for the construction of Feature 1. Selecting green wood also insures a slower-burning fire.

Feature 10

Wood
Diagnostic wood (0.54 grams) from Feature 10 included one genus, *Quercus* spp. (oak, more than one species). Oak wood often can be placed in one of two groups, the white oak group (leucobalanus) and the red oak group (erythrobalanus). However, some oaks are known to hybridize and often show features of both groups, as is the case in Feature 10. Oak is a prime fuel wood, which burns at a steady, high temperature. The fact that it is found in a feature interpreted as a “stone-lined hearth” is not surprising. Oak charcoal also preserves well and is often found in features throughout southern New England in fragments large enough to identify.

Nutshell
Six very small (< 0.01 gram) fragments of charred nutshell were found in the heavy fraction 2.00 mm screen. They all exhibited recent breaks and may have been originally one fragment. One fragment resembled *Corylus* (hazelnut) showing residual grooves after the outer surface burned away. It is within the range of thickness and curvature for hazelnut shell. The remaining five fragments are very small (1 mm – 2 mm) and are identified just as nutshell based on appearance, density, and curvature.

There are two species of hazelnut in New England, *C. Americanus* (American hazel) and *C. cornuta* (beaked hazel). Both species mature in late summer and early fall and are eaten by animals as well as humans. Both are native to southern New England and are often found in sites of the Late Archaic period. Assuming that hazel was deposited in Feature 10 during the same collecting season, it suggests a late summer/early fall season of occupation. The possibility also exists that hazelnut shell lying on the forest floor could have been incorporated into the fire. Perhaps if a larger
amount of the feature soil had been collected for flotation, more nutshell might have been recovered, providing more data for this interpretation.

Conclusions

Based on feature descriptions and field records, and the type of wood identified, Feature 1 and Feature 10 likely had different functions. Feature 1 may have been constructed for smoking either plant or animal food, or used as a smudging pit. Feature 10, containing mostly oak wood, almost surely is a hearth used for cooking and warmth. The presence of a small amount of nutshell may indicate a fall occupation, which concurs with the wood seasonality data from Feature 1.

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Panshin, A.C., and C. de Zeeuw

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**TABLE 1. PLANT TAXA FROM FEATURES 1 AND 10, TOBEY SITE, REHOBOTH, MASSACHUSETTS**

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Total 20 10.67
Speck in Riverview

Mary Ellen Lepionka

In 1923, Frank Goldsmith Speck helped prepare parade floats for the 300th Anniversary of the first settlement of Gloucester, Massachusetts (Gloucester 1924, Pringle 1924). As the Gloucester Times put it (August 4, 1923): “The parade committee are having the assistance of Frank G. Speck of the University of Pennsylvania, who is a summer resident at Riverview, and who is one of the best informed Indian authorities, and who has furnished the following interesting information regarding the Indian tribes who will be represented.”

To ride the floats in historical tableaux, Speck gathered some of his informants and friends as living descendants of Algonquian leaders from the surviving tribes he identified as most influential in Cape Ann history. These included Mrs. Mary E. Chappelle of the Punkapog, lineal descendant of Cut chamakin; Princess (Glady) Tantaquidgson, lineal descendant of Massasoit; Chief Mahtaga and Mrs. Emma Jane Safford of the Mohegan, descendants respectively of Uncas and Tuspaquin; and Eb ben Queppish of the Maspeee Wampanoags. The “Indian princesses” in the newspaper photo show Mrs. Safford and two Narragansetts from Rhode Island, Minnie Bent and Mrs. M. J. Hazard, attending an Algonquin powwow in Providence in 1925 (Evening Bulletin 1925) (Figure 1).

In 1923, the Native Americans in Speck’s tableaux posed in 17th-century regalia with persons representing Samuel de Champlain and Myles Standish, in eerie resemblance to the floats in the 250th Anniversary parade put on in 1892 by Robert Pringle, acknowledging the roles of French exploration and the English at Plymouth in the history of Cape Ann (Gloucester 1901). If the float with Mascowmet deeding Agawam to John Winthrop Jr. was missing, it perhaps was because Speck had found no living descendant willing to represent the sagamore. The Times concluded, “It is eminently fitting upon the occasion which we are celebrating that these representatives of the aboriginal inhabitants of the land, which we now call our own, should be present in person to represent their race which, though much diminished, still dwells in small communities in a few places within our borders.”

The “representative aboriginals” were guests at Speck’s Riverview cottage at Curtis Cove on the Annisquam River across from Pearce Island. On this small headland the ethnologist provided camping ground and had a large tipi erected to house summer visitors (Blankenship 2013). Some arrived by canoe—Abenaki, Penobscot, and Micmac from Maine and Nova Scotia, and Wampanoag and Mohegan from Boston’s South Shore, Narragansett Bay, and Cape Cod. Some he met at the train station. Those were his informants and also his links to Native communities throughout the Northeast and Canada’s northlands and maritime provinces (Dodge 1991).

For example, Speck interviewed and photographed an itinerant Micmac family in Gloucester in 1910. Santu Toney and her son and his wife and baby were camped in Riverview, where they sold baskets and brooms (Figure 2). From Santu, Speck collected a song and an ancestor story about Beothuk survival in Newfoundland through intermarriage with the Micmac (Speck 1922).

Some Speck informants were photographed by Adolph Kupsinel, a photographer living in Gloucester (Figure 3), and the ethnologist himself took many snapshots in the field. His notations on the snapshot of Nipmucks in Grafton identify his informant and friend John Cisco (Figure 4). These are among the many pictures in Speck’s albums of Native Americans he interviewed, and in many cases befriended, stored in boxes in the Phillips Library of the Peabody Essex Museum (Papers of Frank G. Speck E44, Boxes 1, 4, 5, and 6).

If in some ways Speck seemed more comfortable among his informants than among his family, perhaps it was because he was so passionate about his work. His niece, Pat Terry, living in Rockport, Massachusetts at the time of this writing, had the impression as a child that Speck offered little
Speck’s parents bought the land on Riverview Avenue in 1907 and built the cottage in 1910 as a wedding present to Speck and his bride, Florence Insley Speck, a relation of Speck’s biographer, Roy Blankenship. The cottage where Speck entertained Indians and collected turtles, and the garage where he worked, are still there, faithfully preserved by generations of descendants with vacation timeshares (Blankenship 2013) (Figures 5 and 6). Pat Terry’s photograph albums show hordes of youngsters, including Speck’s daughters Alberta and Virginia, feasting at tables on the cottage veranda, romping on Speck’s brother Rhiney’s (Reinhard) dairy farm in Rockport (now a motel abutting Lattof Lane), where their mother lived, and boating on the Annisquam in the flotilla of birchbark canoes Speck had built for them (Figures 7 and 8).

Speck learned to make canoes, one of which is said to survive in the Smithsonian (Blankenship 2013), from Edwin Tappan Adney of New Brunswick and Penobscot men in Maine (Adney 1964, Speck 1940). In Pat Terry’s pictures the children’s parents gather on the rocks and outlooks in Edwardian frocks and Roaring 20s bathing suits to watch the children in the canoes. Speck is there—in photos too faded to reproduce, paddling authoritatively—a small fit-looking man with another 25 years or so before his death in 1950 at age 69.

Speck’s passion was in his blood and nurtured early. At age 7 he was sent to Mohegan, Connecticut for his health to be raised by Fidelia Fielding, a close family friend and Pequot speaker, who introduced him to Algonquian culture. At the age of 14 he was returned to his family in Hackensack, New Jersey, and began coming to Riverview in the summers in 1898 as a teenager (Witthoft 1991).

Speck was steeped in Indian lifeways and lore. In a rare autobiographical statement, when asked how he became an ethnologist, Speck said of himself, “Despite the circumstances that many of my own impressionable youthful days were passed in the settlements of the red people, and early influences were planted deep in my mind by the oldsters whose company I sought, I, like American youths of the day, was intrigued by the romance of the Indian” (Papers, E44 Box 5).

He was also steeped in local history (e.g., Babson 1860). Speck’s 1899 hand-drawn map of Riverview and environs suggests the romance and intrigue of his youthful haunts—the frog pond with quicksand, no longer there; the trail to Pole Hill and Sunset Rock, where the Indians reckoned ceremonial time (Lepionka and Carlotto 2015); the shell middens and Indian burials on the banks of the stream that once flowed past, now beneath a neighboring cottage—grave goods perhaps still leaching into Curtis Cove; the old foot paths to Babson Farm in Riverdale and Beaver Dam in Dogtown; and his curious penciled instructions to himself to investigate a stand of cattails here, a patch of eelgrass there—stuffs of life to the Native people. His later hand-drawn maps track the locations of surviving Native enclaves in New England (Papers, E44 Box 4) (Figure 9).

Romance and intrigue became the compass points of Speck’s life and career. In a circa 1940 photo of him in a hat (Figure 10), he reminds one of Humphrey Bogart, if not Indiana Jones—yet he was a rigorous scholar and remarkably eclectic and prolific in his investigations and contributions to the literature. His range clearly exceeded normal ability. He was a polymath, publishing on subjects in ethnology, ethnography, anthropology, folklore, biology, ecology, natural history, linguistics, and archaeology (Fenton 1991, Medoff 1991).

In the 20s and 30s, Speck and his student Frederick Johnson conducted an archaeological survey of Gloucester and registered sites they found at the R. S. Peabody Museum of Archaeology in Andover. A local amateur archaeologist, N. Carleton Phillips, later excavated those sites, which dated from the Middle Archaic through the Contact Period and included numerous shell heaps and a village site (Lepionka and Carlotto 2015, Lepionka 2016).
Speck and Johnson identified settlement areas in Riverview; clam middens along the Annisquam and its saltmarshes and river islands; stone circles and fire pits in Riverdale before the dam; and house floors and activity areas in Babson’s pasture and Montgomery’s boatyard, where Mill Pond and the O’Maley Innovation Middle School playing fields and parking lots are today. They also disinterred ten Indian skulls in Annisquam (Speck 1923). It was the day of the collector, with NAG-PRA decades in the future.

Following in their footsteps, Phillips excavated at Riverview, Wingaersheek, Annisquam, and sites in Ipswich, amassing a large collection of stone artifacts and animal bones now housed in the Cape Ann Museum in Gloucester and the Robbins Museum of Archaeology in Middleborough (Lepionka 2013). He also found corn hills and burials on Coffin’s Beach in West Gloucester, burials on Adams Hill in Annisquam, and collected ten more Indian skulls from Hog Island in Essex Bay, which he sent to Ernest Hooton and Alice Brues at the Harvard Peabody for anthropometric analysis (Phillips 1940, 1941). Meanwhile, Speck’s student Fred Johnson, a Canadian who began as an ethnologist and switched to archaeology, went on to excavate the famous Boston fish weir under Boylston Street, introduced CRM archaeology and radiocarbon dating, and became director of the R. S. Peabody Museum (Johnson 1942, 1943, National Anthropology Archives 1982).

Speck’s writing and publishing regimen impressed his Cape Ann friends, the anthropologist Ernest S. Dodge of the Peabody Essex Museum in Salem and Ralph W. Dexter, a biology professor at Kent State University in Ohio (Dodge 1991, Dexter 1984). Dexter also summered in Gloucester and accompanied Speck on expeditions in the 1940s. They collected archaeological artifacts on Cape Ann—arrowheads on the beaches and in rock shelters, and ceramic, glass, and metal fragments from cellar holes in the abandoned colonial settlement of Dogtown in the center of the cape’s watershed (Dexter 1945).

Speck and Dexter studied marine mollusks and eelgrass on Cape Ann in aid of conservation and visited the sea-side laboratory of zoologist and paleontologist Alpheus Hyatt in Annisquam (Dexter 1980). As a natural history buff, Speck also expressed a lifelong interest in birds and reptiles (Speck 1917a). He wrote about the birds of Cape Ann, maintained a bird garden, collected Native American bird lore, banded sea gulls, and contributed articles to Audubon publications—and he studied turtles. In November 1947, one of his last years, he purchased one live adult *Emys blandingii* by mail order from Oshkosh, Wisconsin, for $1.35 and one each of *Sternotherus odoratus* and *Chrysemys picta bellii* from Brighton, Michigan, for fifty cents each—all plentiful in his day, and all except the painted turtle (*C. picta*) threatened today (Papers E44, Box 1).

Speck collaborated and jointly published with Dexter studies of the subsistence ecologies of the Wampanoags, Micmacs, Malecites of New Brunswick, and Houma of Louisiana (Speck and Dexter 1945, 1951); and with Ernest Dodge at the Peabody Museum in Salem, collecting and documenting the material cultures of the Micmac and Naskapi and other peoples of Northeastern North America (Speck and Dodge in Papers E44 Box 14). Along with masks, cradleboards, drums, rattles, canoes, baskets, garments, moccasins, snowshoes, and crosbrows, Speck also collected pictograms and lexicons, swapping word lists and grammars with Tappan Adney and Warren Gookin of Oak Bluff, Martha’s Vineyard Island, a descendant of Daniel Gookin, the sympathetic Superintendent of the Praying Indians for the Massachusetts Bay Colony in the late 17th century, whose *Historical Collections of the Indians of New England* are a principal primary source for historians today (Adney and Gookin correspondence in Papers E44 Boxes 11 and 12; Wheaton 2002; Gookin 1674, 1677).

Anthropological linguistics was an early interest, and throughout his career Speck and his correspondents sought to correct transcriptions of Native languages and trace the history of tribes and bands by their language divisions and dialects. At Columbia, where he received his M.A. degree in 1905, Speck had taken classes from the comparative philologist J. D. Prince and Franz Boas, the giant of American cultural anthropology (Ahearn 2008). Speck compared Algonquian and Iroquoian legends, myths, and cosmologies with those of ancient Egypt, Babylon, Persia, Greece, Rome, and the Jewish, Christian, and Islamic traditions.
and found stories with the kinds of parallels that C.G. Jung referred to as “archetypes” (Speck 1919, 1928, 1935; Jung 1969).

Speck was also entranced with Edward Sapir’s ideas about linguistic relativity as the key to worldview, and gathered proofs. He even argued for the so-called Sapir-Whorf hypothesis using examples from the communication systems of squirrels and birds (Sapir 1921, Whorf 1956). Well ahead of his times, when some people still spoke of Native Americans as a lost tribe of Israel, Speck was musing about the interconnectedness of all people in deep time, with historical linguistics as the key to discovering true origins.

Speck’s interpretive framework and manner of research mostly reflected his times. The 20s and 30s were the heyday of American ethnographic and curatorial expeditions inspired by Franz Boas and the Columbia School of anthropology (American Philosophical Society n.d.). The times also were mired equally in discourses of cultural relativism and scientific racism. Speck respectfully surrendered himself wholly to Native ceremonies and cosmologies, yet unflinchingly referred to “red men”, “primitive people”, and the encapsulated identity of all Native Americans as “the Indian”. His photographs include the front and profile mug shots favored by the physical anthropologists and eugenicists of his day, along with snapshots of himself beside chiefs in feathered headdresses and maidens in peaked caps. His brief flirtation with eugenics ended in his complete rejection of it (Speck 1946).

Like other ethnologists and ethnographers of his day, Speck was concerned about the disappearance of Native cultures and raced to preserve them. He gathered copious notes, sometimes to the point of exhaustion, on the cultural practices, economies, languages, beliefs, rituals, medicine, arts, and technologies of Native Americans of New England, New York, and the Canadian Maritimes (e.g., Speck 1917b). To do this he trekked near and far—e.g., to the Barren Ground band of Naskapi in Labrador, the Six Nations Iroquois in Ontario, the Maniwaki in Quebec, the Penobscot in Old Town, Maine, the Cayuga at Seneca Falls, New York, the Mashpee at Herring Pond in Plymouth, and the Nanticoke at Indian River (e.g., Speck 1940, Wal-lace 1991). His wife and son accompanied him on some expeditions. With the Tutelo and Cherokee, for example, Frank Staniford Speck recorded Native songs on wax cylinders (Lipkind 1993). Among the Canadian Delawares, Speck observes, “A series of observations upon the movements of the constellation Ursa Major (Great Bear) are to be noted in the Bear Ceremony...A faculty of discernment is evident which leads to the interpretation of the movements of the stars as a gauge to the life affairs of mankind. A close association of stars with the souls of the deceased is shown in the mythology and philosophy of the tribe” (Papers, E44 Box 1). He famously recorded Algonquian and Iroquoian legends of the “celestial bear” and witnessed the events of the secret bear sacrifice ceremony, complete with sketches (Speck 1945). Speck’s first-hand accounts of ceremonies as a participant observer often are rapturous. In 1936 he wrote (Papers, E44 Box 1):

I am an adopted member of the Turtle clan of the Seneca Indians tribe of Iroquois. This means that I have a Turtle clan mother, one who calls me son and whom I now call mother, for my biological mother is in the realm beyond, picking strawberries, as a Seneca allegory refers to the deceased. I am known in the Seneca community as Gahedagowa, while my clan mother is Gweni-yua, “Pleasant Voice”, by name.

Although deeply immersed in Native cultures—and anthropologists stereotypically “go native” at one time or another—Speck may have been ambivalent about stepping away from the “pure science” his profession required at the time. He became concerned about the welfare of surviving Native communities, however, and occasionally interceded on their behalf—for example, in letters to authorities about land rights or the polluting of rivers on which Native people depended. His files at the Phillips Library in Salem are full of letters to him from tribal chiefs and councils expressing gratitude for his interest.

Nevertheless, some of Speck’s closest informants are said to have abandoned him (Blankenship 2014)—although the anthropologist Marge Bruchac points out that his Mohegan friend Gladys Tantaquidgeon was very busy, and her brother was away in the military during the 40s.
After Speck’s death, his family apparently no longer communicated with the Mohegans for reasons no one knows (Bruchac 2017). Mohegan efforts to achieve federal recognition as a nation had failed despite the testimonies of Speck and others affirming their authenticity and historical integrity (U.S. Dept. of the Interior 1989). The United States did not recognize the Mohegan Indian Tribe until 1994. Roy Blankenship speculates that Mohegan Hill had become “anti-white” (Blankenship 2014), but perhaps they had merely become anti-anthropologist. The 1940s inaugurated a sea change in attitudes toward and relations between ethnographers and their subjects. Native peoples began to view anthropologists and archaeologists as exploitative, often obtuse, and possibly dangerous, telling the secrets of sacred ceremonies, revealing the locations of sacred places, stealing the bones of ancestors. In 2013, when asked about the copies of Speck’s *Penobscot Man* for sale in the Penobscot Museum in Old Town, Maine, curator John Neptune—a descendant of Old John Neptune (1767-1865)—confided, “He asked too many intrusive questions and was not welcome any more, and he got some things wrong in his book. But he was not a bad man, and we sell the book anyway.” (Neptune 2013) Speck’s Seneca name, Gahegawoga, means “Porcupine”.

The list of Speck’s articles and books contributing to his fields of study is staggering. His papers and letters are housed in the American Philosophical Society in Philadelphia, the Smithsonian, the University of Pennsylvania where he received his doctorate and became head of the Anthropology Department, the Peabody Museum of Archaeology and Ethnology at Harvard, the Phillips Library of the Peabody Essex Museum in Salem, and several other repositories. His letters, notes, sketches, samples, lectures, and photographs in boxes at the Phillips best reflect his work at Riverview. The cottage on the Annisquam River, his place of intrigue and romance, was the jumping off point for his Northeast expeditions. At Riverview he expressed the passion instilled during his exposure to Native lifeways in his youth, and from there he traveled far on many paths, hardly ever stopping to rest.

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Figure 1: Three “Princesses”

Figure 2: Santu, Speck’s Micmac Informant

Figure 3: Adolf Kupsinel’s Portrait of a Speck Informant
Figure 4: Speck’s Snapshot of Nipmuck Cisco Family Members

Figure 5: View of Annisquam River from Speck Cottage

Figure 6: Garage Where Speck Worked

Figure 7: Birthday Party on Speck Cottage Veranda

Figure 8: Children with Speck’s Model Canoes
A Preliminary Analysis of Polished Pebbles at the Middleboro Little League Site

Rachel Mulroy

Background

The Middleboro Little League Site (19-PL-520) is located on three terraces along the northwest bank of the Nemasket River in Southeastern Massachusetts. The Nemasket connects the larger Taunton River to the north with the Lakeville ponds to the southwest. These terraces were formed by successive draw-downs from proglacial Lake Narragansett after the last glacial retreat (Hoffman, 2014: 2). Prior to the formation of the lake, the area had been covered by the Buzzards Bay Lobe of the Wisconsinan Glacier. The soil at the site is Gloucester Loamy Sand, formed from granite-based glacial till. (Hoffman, 2014: 2)

The Nemasket Corridor was used both for transportation and for the acquisition of lithic and food resources throughout the pre-Contact and Contact periods (Hoffman, 2014: 2). The Middleboro Little League site is dated to the Early Archaic through Late Woodland Period, with the possibility of the First Terrace spanning to the present (Hoffman, 2014: 141). Most of the Pre-Contact diagnostics appear to be from the Late Archaic through Transitional Archaic Periods (Hoffman, 2014: 133-135, 152).

Excavations on the First and Third Terraces recovered ceremonial artifacts including polished pebbles, paint stones, quartz crystals and crystals in matrix, and Herkimer diamonds, among others (Hoffman, 2014: 79). The polished pebbles are of “various sizes and shapes with a satiny sheen on the surface unlikely to be the result of stream-washing.” (Hoffman, 2014: 114) It was speculated that some of the polished pebbles may have been gastrooliths or tumbled by use as rattle stones (Hoffman, 2014:114).

Polished pebbles appear to be concentrated in features, suggesting they were collected by Native
people and are not simply part of the local environment (Hoffman, 2014: 114 – 115). There is a “strong tendency for the paintstones and polished pebbles to be concentrated in the lower levels of the features (and into the underlying C-zone . . .), while chipped stone tools tended to be in the upper levels (Hoffman, 2016)”. The deep pit features at the site may have been created for the intentional storage or offering of these ceremonial items (Hoffman, 2016). Most ceremonial artifacts seem to be more concentrated in the lower levels of the deeper pit features (Hoffman, 2014: 153). It is possible that the flake and broken tool scatter found within the upper 15 cm of the surrounding features (four of them from the First Terrace) indicate a ritual closing of a deposit of polished pebbles for storage or offering (Hoffman, 2014: 136 – 138).

There is archaeological evidence of specialized sites for regional exchange. Based on the predominance of ceremonial materials at the Middleboro Little League site, it may be the case that the First and Third Terraces were heavily utilized for the gathering and possible storage of ceremonial items to be distributed later throughout the region. Most of the artifacts were manufactured on site; only a small number of artifacts manufactured elsewhere were recovered. The same ceremonial items have been recovered in burial contexts from the Wapnucket site, 3 km upstream. Another possibility being explored with local descendants is the idea that these polished pebbles in the lower levels of features and below feature soil are actually offerings (Hoffman 2016). This may be implied from information from Natives suggesting the site may have been occupied by resident Wampanoag and by a transhuman group referred to as the “Twisted Rope People.” (E. Perry, 2008) However, the possibility that the site may have functioned to reinforce social and ceremonial solidarity in the region persists. (Hoffman, 2014: 66 – 167)

Local materials dominate the lithic distribution of the population of recovered artifacts at the Middleboro Little League Site, at 96.1%, with a small number of regional materials (3.7%) and few exotic lithic materials (0.6%) (Hoffman, 2014: 154). Regional lithic materials present at the site include Attleboro red felsite, basalt likely from the Connecticut Valley, and andalusite from the Clinton-Newbury Fault. Exotic materials include chert and chalcedony. Polished pebbles had a relatively similar lithic distribution to the population of lithic artifacts recovered within the First and Third Terraces of the Middleboro Little League Site. (Hoffman, 2014: 157 – 158, 160)

Methods

To date, there has been no typology developed for polished pebbles, thus complicating the interpretation of the Middleboro Little League site. While polished pebbles have been uncovered at other sites in various contexts such as grave goods, rattle stones and works of art, none are known to have produced the impressive quantity of these artifacts found here. For this reason, I devised a typology based on the finds from the Middleboro Little League site to aid in analysis and interpretation. This may be a preliminary step in the development of a more globally applicable model.

A sample of polished pebble artifacts consisting of fifteen different lithic materials was taken, using a random number generator. The generator selected 500 artifact numbers of polished pebbles at random from a population of 4,507 artifact numbers without duplication, by using the range between the polished pebble with the lowest artifact number and the polished pebble with the highest artifact number. The 500 resulting polished pebbles make up the sample. A spreadsheet with relevant artifact information provided locational data regarding the associated feature, stratigraphic level, and excavation unit. Quantitative data included in the spreadsheets provided dimensions by length, width, thickness, and weight. Descriptive data on lithic material and color was provided as well.

During the recovery process at the site, an outline of each artifact was recorded. After the site examination (on both terraces) and data recovery excavations (on the third terrace), certain shapes appeared to recur across the distribution of polished pebbles. Part of my research focused on revisiting the artifacts within my sample to examine the shape of each pebble. This was performed at both the Robbins Museum of Archaeology and the Anthropology Lab at Bridgewater State University. Shape categories were initially produced from memory with the aid of the Principal Investigator,
Dr. Curtiss Hoffman. Over time, other shape-types were added.

Material

To determine whether the sample is representative of the total of polished pebbles by material, a chi-square test for goodness of fit was conducted based on the following hypotheses:

$H_0$: The sample data are not consistent with the distribution of material within the population.

$H_1$: The sample data are consistent with the distribution of material within the population.

Where $\chi^2 > 8.5$, the P-value was $0.1 < P < 0.9$, therefore the sample is representative of the population and the null hypothesis must be rejected. Because the sample is representative of the population, my methods may be applied to the whole population, and I expect very similar results.

Shape

The next part of my research was to inspect each artifact in the sample and define it by shape, where $a =$ length, $b =$ width, and $c =$ thickness. Figures 3 and 4 show the results. I also calculated the volume of polished pebbles in cubic centimeters. I wanted to observe where natural breaks occurred in the data or if they occurred at all, because this might lead to separate types by size.

There were three subcategories of rounded polished pebbles, and they had the highest proportions within the sample. These are Ovals (Figure 6), Disc-shaped (Figure 7), and Spheroid (Figure 8). While all share qualities such as curvature and/or roundedness, there is enough variation among them to necessitate the creation of three types based on shape. I defined ovals as shapes where $b < a > c$. I calculated the difference between length, width and thickness. Five subcategories of polyhedral-shaped polished pebbles were defined also. These are Cuboid (Figure 9), Rectangular (Figure 10), Pyramidal (Figure 11), Tetrahedral (Figure 12), and Pentagonal (Figure 13). Still other polished pebbles were placed in either the Cylindrical (Figure 14) or Kidney-shaped (Figure 15) subcategories.

Broken polished pebbles were categorized in a group by themselves. It is possible to further organize these broken pebbles into sub-groups, where breaks and polish are apparent, in the following ways:

- Broken After Polishing (Figure 16)
- Broken Prior to Polishing (Figure 17)
- Broken with Different Stages of Polish (Figure 18)
- Polished Pebble Sherds

Splitting the typology in such a way is necessary to provide an accurate context of what people were possibly doing to these pebbles and/or how people were using them.

Color of Polished Pebbles by Material

These pebbles can be further distinguished by color, as shown in Figures 4 and 5. For instance, the quartz occurs in a variety of colors. It was apparent that the sample followed a pattern relative to color by material. It was also apparent that certain colors were apparent throughout the sample. The totals show the distribution of color across the sample.

Color by Shape

To determine if a color pattern exists among these polished pebbles, I examined the color of each pebble by shape. Figure 4 shows that the shape with the most pebbles of a certain color is white ovals (64). The second-most frequently occurring is tan/brown ovals (40). White and tan discs have comparable frequencies well above the rest, making them tied for the third-most frequently occurring shapes (30 each). Based on Figure 19, it is likely that the quantities of white and tan/brown pebbles in general account for this distribution. The general pattern seems to be that the number of pebbles in each shape category decreases according to color, with white shapes being of the highest proportions, then tan shapes, then red/rose/purple/maroon, then black/grey and clear.

Figure 5, showing material by color, is consistent
with these findings. It shows in descending order that the most shapes are white, then tan/brown, then red/rose/purple/maroon, then black/grey, then clear. Figure 5 confirms that most shapes are ovals, followed by discs. Red/rose/purple/maroon ovals, discs, and pyramids occur at similar frequencies (twelve to nineteen). The white spheroids, tetrahedrons, and rectangles occur within the same range as the pebbles mentioned above. Also, black/grey ovals, clear ovals, and tan/brown pyramids fit in the same range as well, though each is about half as abundant as the white and tan/brown discs.

Size of Polished Pebbles
A total of 351 polished pebbles for which volume could be accurately determined by shape were used in this analysis. A defined shape is necessary for determining the appropriate formula to measure volume. To conduct a size comparison, I estimated volume in cubic millimeters of color and shape categories, where \( a = \) length, \( b = \) width, and \( c = \) thickness (or height). Volume by color and shape was calculated to determine if patterns existed.

I also ran statistical analyses on weight by material, then by color. Weights less than 0.1g were tabulated as 0.1g, to adjust for the precision of the scales. Many polished pebbles weigh so little, it is likely they are affected by specific gravity (sG), which varies by material. Most polished pebbles in this sample (94.8%) weigh under 3.15 grams. With two outliers removed – one of black felsite, weighing 37.0 grams, artifact #16109, and one of brown quartzite weighing 22.85 grams, artifact #17619 – the standard deviation is 3.8, based on a mean of 2.5 grams. Yet based on range, most of these pebbles when categorized by material are ca one gram in weight. When grouped according to weight by color, the same pebble (#16109) that skews the data for the felsite also skews the black/grey category. Except for the black/grey and banded categories, all other color categories average less than one gram in weight. This data appears to show there is a preference for smaller pebbles and that no apparent hierarchy based on weight exists within the sample.

Distribution of Broken Polished Pebbles
These pebbles occur in four sub-types, as noted above. Broken pebbles were examined based on their association with features at the site. Finally, the level in which they were uncovered was examined to see if broken pebbles were associated with stratigraphic levels. Broken pebbles were compared by level to the locations where the rest of the polished pebbles in the sample that are not broken were uncovered. This data was analyzed to better understand how the distribution of broken pebbles compared to pebbles that were not broken (see Figure 20).

Comparative Analysis of Polished Pebbles by Origin
To account for the polished pebbles at the Middleboro Little League site, Clyde Andrade, a Wampanoag Tribe member (personal communication), suggested that these pebbles may have been collected from a beach or river with a preference for smoother, rounder pebbles. I conducted a brief analysis that compared pebbles from different sources to the polished pebbles in the sample, to determine whether these pebbles are present at the Middleboro Little League site because they were collected by people who liked their natural polish, or if people were acquiring pebbles as raw material and doing the polishing themselves.

I inspected pebbles from three sources: beach pebbles, river pebbles, and pebbles from a rattle. I attempted to include pebbles of the same materials as were represented in the random sample of polished pebble artifacts from the Middleboro site. I took fifteen beach pebbles from Horseneck Beach in Westport, MA. From the Russells Mills Landing on the Slocum River in Dartmouth, MA, I took a sample of six pebbles while standing at the water’s edge. At the Robbins Museum, I inspected all six white quartz rattle shaker stones from a rattle that was part of an interactive exhibit in the museum – where the pebbles were inserted as shaker stones in a rattle reproduction and shaken by visitors over a ten-year period.

I first attempted to macroscopically identify any similarities or differences between the pebbles and my sample from the Middleboro Little League Site. My attempts to gauge the degree of polish on each group of pebbles under a microscope was inconclusive. Either my method of microscopic investigation was not sufficient to identify evidence of human modification versus natural weathering of
pebbles, or that at least some polished pebbles in the archaeological sample were collected through a process of selection rather than human modification.

Analysis

What material of pebble is most prominent? Is there a correlation between material and color?
Quartz is by far the most prominent material of polished pebble, making up 79% of the total sample (397 pebbles). While this proportion is different from that reflected in the total population, the proportion of quartz still represents the majority of polished pebbles within the total population, at 66%. Seven color varieties of quartz are present in the sample – white, tan, red, rose, purple, grey and clear. White quartz occurs in the sample at the highest proportion, with tan quartz at the next highest proportion.

The color cosmology of the peoples of the Northeast is represented by the colors black, red, white and yellow. These colors are represented at the Middleboro Little League site in polished pebble and paintstone artifacts (Hoffman, 2016). George Hamell argues that “color is a semantically organizing principle of ritual states-of-being and of ritual material culture.” (1992: 456) However, the categories of colors are somewhat arbitrarily defined across cultures. Hamell cites Kidd and Kidd’s observations that the most popular trade beads and bead types among Eastern Algonquian and Northern Iroquois consumers were white, black, red, green or blue (1992: 459 – 460).

That Contact Period peoples were substituting one color for another - such as purple marine shell beads for black-colored beads - could be indicative of a similar tendency among their ancestors. Given this evidence, it appears likely that tan quartz would represent yellow, and that rose and maroon pebbles would be lumped with red ones. In the typology used in this study, purple pebbles are lumped with red, maroon, and rose pebbles based on appearance. However, it could be that purple pebbles were substitutes for black. It could be that clear pebbles were just as likely to be considered white pebbles. Also, gray pebbles could have been substituted for black. Brown pebbles are few in quantity and likely served as a substitute for yellow within the color cosmogony, as tan most likely did. (Hamell, 1992: 457, 460 – 462)

White quartz is dominant in this sample, at 176 polished pebbles. There are 119 tan quartz pebbles. White quartz pebbles represent of 98% of all white polished pebbles. Except for a white granite pebble (#19003) and a chalcedony pebble (#14050), all white polished pebbles are of quartz. Of all tan/brown pebbles, 80% are tan quartz. Six other materials make up the rest of the tan/brown color category. There are 48 clear pebbles in the sample. According to Nipmuc tribal member Rolf Cachat-Schilling (2016) and Wampanoag tribal member Linda Coombs (2016), these are analogous to white.

Quartz is also present at the Middleboro Little League site in the form of crystals, cobbles, preforms and small stemmed type #2 projectile points (Hoffman, 2014: 79). It could be that the distribution of quartz within the polished pebble sample is as large as it is due to the local availability of material. However, the presence of quartz crystals at the site suggests people were intentionally selecting the material. Since paintstones of limonite, graphite, and hematite exist at the site, it may also be the case that white was selected for polished pebbles to complete the distribution of colors.

In the color categories of red/rose/purple/maroon and black/grey, quartz occurs less frequently but still dominates over other materials. It represents 53% of red/rose/purple/maroon pebbles. Quartz and felsite occur at the same rate among black/grey pebbles at 27%. Other proportions of quartz polished pebbles account for more than half their respective color categories, but no other color category has such diversity among material.

The next most frequently occurring material is felsite, at 9% (43 pebbles). Except for Attleboro red felsite, it is present in the glacial drift at the site (Goncalves, 1999). It occurs in the sample as brown, red/purple and black/grey, but is mostly red/purple or black/grey (fifteen pebbles in each category).

Quartzite occurs in the third-highest proportion of the sample at 6% (28 pebbles). But, among red/
purple and tan/brown pebbles it does not compare to the frequencies of felsite or quartz. It may be that quartzite pebbles, which are often found in black/grey varieties, were necessary to supplement a lack of available black/grey quartz and felsite.

All other materials of polished pebbles account for 7% of the sample. These are materials that occur in such low frequencies it does not make sense to categorize them individually. Chert comprises 3% of the sample and occurs in tan/brown (7) and red/purple (8), with a single black pebble. The distribution across color categories seems to fit the pattern of distribution of quartzite and felsite. The quantity of pebbles by color category, however, appears random. It may be argued that some specimens were chosen specifically for their color, as the white and tan quartz likely were. But, to assume people were specifically selecting material in such small quantities may speculate too much.

What can be said about the shapes - frequency, distribution among material, color, size? Is shape related to color or material?

The most frequently occurring clear quartz polished pebbles within the sample are ovals (fifteen) and spheroids (six). Most of the clear quartz polished pebbles are characteristically rounded and unique in color compared to the rest of the sample. They comprise their own type within the typology. The rest of the sample is more evenly distributed, except for pentagonal and cylindrical shapes and banded colored pebbles, which represent the lowest frequencies.

One impression pressed into it (#10743). One polished pebble (#20289) appears drilled. This differentiation could be evidence of what Binford would describe as sociotechnic purposes (Binford 1962: 221-223, 256), or it could represent ideotechnic artistic expression. Based on the evidence, further investigation might determine the pebbles’ ceremonial significance.

Kidney-shaped pebbles are 90% of quartz varieties. They are represented across all colors except grey/black. Cubes are 80% quartz. The remaining 20% are made of felsite, followed by quartzite and chert. Tetrahedral polished pebbles differ from pyramids in that they do not have bases and apexes. Quartz makes up 88% of tetrahedrons, while the others are of felsite, quartzite and chert (like the cubes). They are represented across all color categories except banded. Pyramids are mostly tan/brown or red/rose/purple/maroon in color. These colors each represent 28% of all pyramids. They are the only shape (excluding clear varieties) where white is not the dominant color. Quartz still dominates the pyramids, at 52%, followed by felsite at 32%, then quartzite, chert and granite. Spheroids are 91% quartz, represented by white, tan/brown and clear varieties. These are unique from other ellipsoids in shape. In 19 of the 34 spheroids in the sample, the difference of a – b < 1 millimeter. Rectangular-shaped pebbles are distributed more evenly by color: 32% are white, 25% are tan/brown, red/rose/purple/maroon are 17% of rectangular pebbles and black/grey are 15%. The clear rectangular pebbles are 10% of this category.

Most of the pebbles within the sample are white (63) or tan/brown (36) quartz ovals. The next most frequently occurring shape is white quartz discs (30). By shape alone, ovals are dominant (153), with discs occurring second-most frequently (87). This is consistent with the fact that most pebbles are quartz, and the most quartz shapes are ovals and discs. The proportions of white polished pebbles by shape shows that, despite the high frequency of white quartz ovals, they are not disproportionate to the rest of the categories (see Figure 21). Frequency of material by color and shape — though high in some cases — is practical for designating types because the proportions of white quartz are relatively consistent throughout the sample by shape.

Volume appears random - is it standardized to a certain material or shape or color?

For the most part, volume by color appears standardized. Half (51%) of polished pebbles measure between 0.01 ccm and 0.09 ccm. More than one-third (35%) of pebbles measure in volume between 0.1 ccm and 0.9 ccm. Material also appears to be mostly standardized — the average volume has no more than 0.11 ccm difference across most categories (excluding those materials represented by a single measured pebble, and granite, which has only two pebbles with measured volumes). Volume appears standardized across shape categories, as well, despite wide variation within any
given shape category (evidenced by standard deviation). This conformity across material suggests intentional selection and/or human modification.

How do broken pebbles factor in? What is the pattern of broken pebbles that were polished before breaking versus broken pebbles that were broken after polishing? Is this evidence of rattle shakers?

Broken polished pebbles became so before and/or after polishing. This additional modification occurred either before or after polishing, or both. These facts seem to support the claim that these polished pebbles are culturally altered material, but further clarification is needed.

The 2012-2014 Middleboro Little League Site Report theorizes that polished pebbles may have been intentionally buried and then covered with a layer of flakes as an offering. To determine if the broken polished pebbles could have been treated differently from the unbroken pebbles, a comparison of broken pebbles to the rest of the sample was necessary.

The result was that 45 broken polished pebbles were uncovered from 27 different features (see Figures 22 and 23). There are 212 artifacts within the sample of 500 that were uncovered in features, or 42.4% of the sample. Broken polished pebbles uncovered in features represent 48.7% of all broken polished pebbles. Feature 188 returned the most broken pebbles of any single feature and also had the most polished pebbles altogether. Feature 210 returned the second-highest number of polished pebbles overall, and the second-highest number of broken pebbles. Unbroken pebbles uncovered in features account for 43.4% of all unbroken polished pebbles. Therefore, broken polished pebbles are not more or less likely to be found in features than other types of polished pebbles.

What, if any, evidence of gastrolith by-products is reflected in the sample?

Evidence of gastrolith by-products at the site is inconclusive. Based on Brooks, et al.’s physical description of gastroliths in migratory waterfowl and accompanying imagery, it is possible there may be some gastroliths within the polished pebble collection (Brooks, et al., 2012: 22, 24). Wings argues that certain birds may ingest silicate pebbles to supplement dietary needs (Wings, 2007: 6-7). Except for calcium, evidence proving mineral sufficiency of these gastroliths is sparse. However, for the purposes of this study, it can at least be said with certainty that some crows are gastrolith-producing species (Wings, 2007: 5-7). Another possibility mentioned by Wings is the likelihood that predators are consuming prey that produce gastroliths as a form of accidental ingestion. Based on this claim, there may be cause to research gastroliths associated with present-day (or the remains of) fish, turtles, stoats and black bears (Wings, 2007:11).

Communication with a reptile specialist from Bridgewater State University’s Biology Department was made to inquire whether painted turtles or any other turtles in the region were known to produce gastroliths. While turtle species are known to ingest seeds, whether they ingest pebbles also remains unknown.

Physical Comparison with Beach, River, and Rattle Pebbles

As mentioned above, the comparative analysis under the microscope between polished pebbles and pebbles from the beach, river and rattle yielded no definitive results. Many of the pebbles in the rattle showed signs of polish. However, it is interesting that none of these pebbles were chipped or broken after having been utilized as shaker stones over a ten-year period. It is highly likely that the Robbins Museum rattle was being shaken by young people and children, who are not expected to exert the same force on an object as adults can. If pre-Contact period rattles were used by adults, this may account for the discrepancy in the lack of broken pebbles in the rattle reproduction versus the evidence of battering and breaking of polished pebbles at the Middleboro Little League site.

The pebble from the river that appeared most like the polished pebble artifacts is an oval of quartz; it exhibited a satiny polish similar to the artifacts, whereas other river pebbles were smooth but not satiny. Of the beach pebbles, the brown felsite and the white quartz pebbles exhibited a satiny polish while the others were mostly smooth but not satiny, just as the river pebbles. There was no apparent difference between beach pebbles collected at the water’s edge and pebbles collected further up the beach.
Do polished pebbles have ideological importance?

The four colors red, white, black, and yellow, are clearly represented across the distribution of this sample, but are not equally distributed (Figure 24). Other than the clear quartz variant, no other major shape group has a similar representation of color by material. Tan quartz appears yellow-like in most cases within the sample. It may not be a stretch of the imagination to categorize brown felsite and chert (among other less frequently occurring materials) as yellowish also. Red/purple/maroon/rose varieties are representative of the color red. It is reasonable to include the grey polished pebbles with the black color. Hamell argues that certain colors could be used interchangeably among peoples of the Northeast (Hamell, 1992: 458 - 462). The distribution of material by color shows that similar proportions of each color were uncovered in features.

Conclusions

Based on the results of this study, the typology of polished pebbles consists of ten types: Broken Polished Pebbles (that may be further divided into four sub-types) and shape-based types of Ovals, Discs, Spheroids, Cubes, Rectangles, Pyramids, Tetrahedra, Cylinders, and Indiscernible Shapes. The decision to classify types predominantly by shape was based on the following rationale.

Having five major color groups and one much smaller group places the 500-pebble sample in too general a context to make further observations. Classifying types by size is not sufficient, given that the bulk of the polished pebbles show little variation in dimension, and considering that size is relatively standardized across shape categories. To divide the types only by material would lump most of the material into one type and split the rest unnecessarily. It was then considered that the typology might be divided along multiple criteria, such as material and color, or shape and material, or color and shape. To assign types based on all three or even two of these criteria is in most cases splits the pebbles into more types than necessary. White, yellow, red and black are represented amongst most polished pebbles at this site. Lumping the pebbles together into these categories is justified based on Hamell’s research and by physical appearance. I do not think reification has influenced my decision to lump colors together, since color was determined on site during excavation, and the color hypothesis was tested much later with Hamell’s supporting evidence. Defining the typology based on shape allows for the types to be more neatly sub-divided if deemed necessary for analysis of color or material. The standardized size by shape supports this.

The significance of the shapes cannot be determined based on the available evidence. However, the data shows that rounded polished pebbles were either preferred or more easily obtained than polyhedra. Ovals and discs were the most abundant, but again, whether this was a marked preference or a matter of convenience has yet to be determined. For further study, the investigation of how the pebbles were polished and the degree to which they were polished would help determine whether these were collected or manipulated by people. There is no difference in stratigraphic distribution between where broken and unbroken polished pebbles were uncovered. Approximately one-third of pebbles excavated in each level were broken. Almost half of all polished pebbles are found in feature soil (B2) (41%). The level with the second-highest proportion is the C-zone, with 27% of the total pebbles. The unoxidized B-zone (B1) contains 18% of the polished pebbles. Because this zone is not located above the feature soil at this site, and is rather considered leached feature soil beneath features (Hoffmsan 2014), the stratigraphic distribution seems to suggest that people were burying at least some of the polished pebbles.

The predominance of local material suggests people were finding these resources at the site or very close by. This fact, coupled with the proximity of river and food resources, leads to the conclusion that the Middleboro Little League Site was either a convenient location for resource procurement and the manufacturing of ceremonial objects, or it was easily accessible to people who wanted to leave ceremonial offerings upstream from a nearby burial site. These hypotheses are supported by evidence of the ceremonial significance of quartz throughout the Northeast and its occurrence at the site in the form of quartz crystals and Herkimer diamonds. Quartz has well-known spiritual properties, is easy to procure from the local environ-
Based on my findings, future research would benefit greatly from more input of local Wampanoag Tribe members and other indigenous peoples of the Northeast. Given the nature of my findings, researchers would be remiss not to engage in dialogue with the Tribal Historic Preservation Officers and other knowledgeable community members on this subject.

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Wings, Oliver

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Figure 1: Proportion of Materials, Sample vs. Collection

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<td>1.5</td>
</tr>
<tr>
<td>Number Pebbles</td>
<td>35</td>
<td>48</td>
<td>89</td>
<td>284</td>
<td>284</td>
</tr>
</tbody>
</table>

Figure 5: Volume by Color
Figure 6: Oval Polished Pebbles

Figure 7: Disc-Shaped Polished Pebbles
Figure 8: Spheroid Polished Pebbles

Figure 9: Cuboid Polished Pebbles
Figure 10: Rectangular Polished Pebbles

Figure 11: Pyramidal Polished Pebbles
Figure 12: Tetrahedral Polished Pebbles

Figure 13: Pentagonal Polished Pebble

Figure 14: Cylindrical Polished Pebble
Figure 15: Kidney-Shaped Polished Pebbles

Figure 16: Polished Pebbles Broken after Polishing
Figure 17: Polished Pebbles Broken prior to Polishing

Figure 18: Polished Pebbles Broken Both before and after Polishing
### Table 1: Weight Analysis by Material

<table>
<thead>
<tr>
<th>Weight Statistics</th>
<th>Quartz</th>
<th>Felsite</th>
<th>Quartzite</th>
<th>Chert</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Size</td>
<td>396</td>
<td>43</td>
<td>28</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td>Mean</td>
<td>0.66</td>
<td>1.93</td>
<td>3.298</td>
<td>0.7</td>
<td>1.45</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>1.405</td>
<td>5.694</td>
<td>5.386</td>
<td>0.593</td>
<td>2.375</td>
</tr>
<tr>
<td>Minimum</td>
<td>0</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0</td>
</tr>
<tr>
<td>Lower 25%</td>
<td>0.1</td>
<td>0.3</td>
<td>0.38</td>
<td>0.35</td>
<td>0.25</td>
</tr>
<tr>
<td>Median</td>
<td>0.25</td>
<td>0.5</td>
<td>1.3</td>
<td>0.47</td>
<td>0.5</td>
</tr>
<tr>
<td>Upper 25%</td>
<td>0.7</td>
<td>1.5</td>
<td>3.15</td>
<td>0.97</td>
<td>1.2</td>
</tr>
<tr>
<td>Maximum</td>
<td>16.65</td>
<td>37</td>
<td>22.85</td>
<td>2.2</td>
<td>9.3</td>
</tr>
</tbody>
</table>

Figure 19: Weight Analysis by Material

### Table 2: Weight Analysis by Color

<table>
<thead>
<tr>
<th>Weight Sample</th>
<th>White</th>
<th>Tan/Brown</th>
<th>Rose/Red/Purple/Blue/Purple/Red/Maroon</th>
<th>Black/Grey</th>
<th>Banded</th>
<th>Clear</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Size</td>
<td>178</td>
<td>143</td>
<td>71</td>
<td>55</td>
<td>3</td>
<td>48</td>
</tr>
<tr>
<td>Mean</td>
<td>0.757</td>
<td>0.845</td>
<td>0.763</td>
<td>2.597</td>
<td>1.4</td>
<td>0.323</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>1.704</td>
<td>2.286</td>
<td>0.983</td>
<td>5.649</td>
<td>1.562</td>
<td>0.666</td>
</tr>
<tr>
<td>Minimum</td>
<td>0</td>
<td>0</td>
<td>0.05</td>
<td>0.05</td>
<td>0.4</td>
<td>0.05</td>
</tr>
<tr>
<td>Lower 25%</td>
<td>0.1</td>
<td>0.15</td>
<td>0.2</td>
<td>0.3</td>
<td>0.5</td>
<td>0.1</td>
</tr>
<tr>
<td>Median</td>
<td>0.3</td>
<td>0.35</td>
<td>0.4</td>
<td>0.9</td>
<td>0.6</td>
<td>0.1</td>
</tr>
<tr>
<td>Upper 25%</td>
<td>0.75</td>
<td>0.775</td>
<td>0.75</td>
<td>1.5</td>
<td>1.9</td>
<td>0.3</td>
</tr>
<tr>
<td>Maximum</td>
<td>16.65</td>
<td>22.85</td>
<td>5</td>
<td>37</td>
<td>3.2</td>
<td>4.4</td>
</tr>
</tbody>
</table>

Figure 20: Weight Analysis by Color
Figure 21: Broken Polished Pebbles by Level

<table>
<thead>
<tr>
<th>Sample Size</th>
<th>Polish after Break</th>
<th>Polish before Break</th>
<th>Different Stages of Polish</th>
<th>Sherd</th>
<th>Total</th>
<th>Proportion of Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level A3</td>
<td>9</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>16</td>
<td>27%</td>
</tr>
<tr>
<td>Level B2</td>
<td>18</td>
<td>14</td>
<td>10</td>
<td>8</td>
<td>50</td>
<td>25%</td>
</tr>
<tr>
<td>Level B1</td>
<td>11</td>
<td>6</td>
<td>2</td>
<td>4</td>
<td>23</td>
<td>25%</td>
</tr>
<tr>
<td>Level C</td>
<td>17</td>
<td>9</td>
<td>4</td>
<td>8</td>
<td>38</td>
<td>29%</td>
</tr>
<tr>
<td>Balk/Wash/Fill</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>6</td>
<td>30%</td>
</tr>
<tr>
<td>Associated with Feature</td>
<td>20</td>
<td>14</td>
<td>8</td>
<td>8</td>
<td>50</td>
<td></td>
</tr>
</tbody>
</table>

Figure 22: Comparison of Broken and Unbroken Sub-types in Features

<table>
<thead>
<tr>
<th>In a Feature</th>
<th>Unbroken</th>
<th>Polished after Break</th>
<th>Polished before Break</th>
<th>Different Stages</th>
<th>Sherds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>167</td>
<td>20</td>
<td>14</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Proportion</td>
<td>33.40%</td>
<td>37%</td>
<td>46%</td>
<td>50%</td>
<td>35%</td>
</tr>
</tbody>
</table>

Figure 23: Comparison of Broken Pebbles in Features with Most Occurrences of Polished Pebbles

<table>
<thead>
<tr>
<th>Feature</th>
<th>Pebbles</th>
<th>Broken</th>
<th>Percent Broken</th>
<th>Polished after Break</th>
<th>Polished before Break</th>
<th>Different Stages</th>
<th>Sherds</th>
</tr>
</thead>
<tbody>
<tr>
<td>188</td>
<td>22</td>
<td>10</td>
<td>45.4%</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>210</td>
<td>20</td>
<td>4</td>
<td>20.0%</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>162</td>
<td>11</td>
<td>6</td>
<td>54.5%</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>197</td>
<td>12</td>
<td>2</td>
<td>16.6%</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>171</td>
<td>10</td>
<td>1</td>
<td>10.0%</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Figure 24: Polished Pebbles in Features by Color Category

<table>
<thead>
<tr>
<th>Color</th>
<th>Proportion Uncovered in Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>53%</td>
</tr>
<tr>
<td>Red</td>
<td>42%</td>
</tr>
<tr>
<td>Yellow</td>
<td>40%</td>
</tr>
<tr>
<td>White</td>
<td>39%</td>
</tr>
</tbody>
</table>
CONTRIBUTORS

Edwin C. Ballard is an Engineering graduate of Brown University and has an M.B.A. from Boston University. He is a retired Senior Member of the Technical Staff of Texas Instruments Inc., a former Treasurer and Trustee of the Massachusetts Archaeological Society, the former Chair of the Research Committee of the New England Antiquities Research Association, and a Trustee of the Carpenter Museum in Rehoboth, MA. He has been a member of the Robbins Museum staff for 26 years, and has served on the MAS Board of Trustees from 1998 - 2017.

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Rachel Mulroy graduated from Bridgewater State University in 2016 with a B.S. in Anthropology and a Concentration in Public Archaeology. She participated in excavations at the Little League Site from 2014-2016. Her article is excerpted from her Honors Thesis.
NOTES TO CONTRIBUTORS

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Luhman, Hope E.  

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Figures must be referred to in the text and are to be numbered in their order of reference, with their number indicated in the file name. Every item in each figure and each person should be identified. All lettering must be clear and legible. Scales with dimensions, preferably in metric measurements, should be included with all figures for which they are appropriate.

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