

# **Exploring the Diversity of Projectile Points, Expedient Flake Tools and Ceremonialism on an Occupation Site**

By

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## ***Abstract***

This article explores three concepts based on the 2019 article *A Late Archaic Pit House in Woodbridge, Connecticut; and Analysis of Social Dynamics* by Cosimo A. Sgarlata Ph.D., Professor at Western Connecticut State University. The first concept is why are a diversity of projectile points (made from local materials) found on a single component site? The second concept evaluates what utilized flakes were used for and whether they should be considered “expedient tools” or functional tools. The third concept explores the potential for ceremonial activity at a habitation site.

## **INTRODUCTION**

There is tremendous diversity among projectile points from size, blade shape and base configuration. Most work done on points deals with stylistic designs to attribute individual designs to specific cultures and time periods. Remarkable work is done microscopically. What this article strives to explore is functionality through diversity. Is there a way to begin to understand what these differences mean in regards to daily activity? In how they function in conjunction with their hafts? A literature search turned up some interesting research and a few answers. The article explores the subject through experimental testing (controlled and field), raw materials, hafting, small projectiles and atlatls, projectiles made on site, and discarded points.

This article began as an exploration of questions posed by the lithic assemblage from the Warner Site. In the process of researching these questions it became apparent that the questions and answers addressed broader issues within New England archaeology. The literature search found relevant research that discussed alternative explanations and theories which are rarely, if ever, discussed or acknowledged within the traditional canon of New England archaeology literature. This research deserves an appropriate place within the ongoing scientific debate of these topics in New England.

Sgarlata proposed the large quantities of expedient flake tools found on site conformed to a theory called “Expedient Technologies and Sedentism” by Parry and Kelly (1987). An internet search conducted by the author found that article plus two others by archaeologists who have challenged the theory. The original article cited sources on the flake tool industry that provided in depth information on the subject.

Potential ceremonialism on the Warner occupation site is delved into through comparisons of artifact burials in the Late Archaic period that are reflected in the historic period recorded by anthropologists.

## DIVERSITY OF PROJECTILE POINTS

Warner Locus I is a single component Late Archaic (6,000 to 3,700 years ago) site in Woodbridge, Connecticut containing a diversity of locally made projectile points and flake tools. Listed below and are the types of tools and the raw materials they were made from (Sgarlata 2019, 10-11).

### Small Projectile Points

*Quartz:* Wading River (Late Archaic)  
Squibnocket Triangular Points (Late Archaic)  
Narrow stemmed point base (Late Archaic)

*Chert:* Lamoka Point (Late Archaic)  
Burwell Point (Late Archaic)

*Hornfels:* Levanna Point (Late Woodland)

### Large Projectile Points

*Chert:* Snook Kill Point (Terminal Archaic)  
*Basalt:* Preform (unidentified time period)  
Point tip (unidentified time period)

### Knife

*Hornfels:* Knife (unidentified time period)

### Utilized Flakes

27 flakes

*Quartz* – Eight

*Chert* – Eleven

*Basalt* – Three

*Hornfels* – Three

*Jasper* – One

*Quartzite* - One

15 retouched flakes

*Quartz* – fourteen

*Basalt* – One

A total of 42 utilized flakes (Ibid,10)

The projectile points (with the exception of two) were from the Narrow-Stemmed Point Tradition in the Late Archaic Period and are radio carbon dated to 4420 to 4530 B.P. at the Warner site. The two exceptions were isolated finds one from the Late Woodland Period a Levanna point recovered from the plow zone and a Terminal Archaic Snook Kill point (3,700 – 3,000 B.P.) also recovered from the plow zone (ibid,12). The

last two will not be part of the analysis due to being from time periods post the pit house era.

The Late Archaic period artifact collection had projectile points and flake tools made from various raw materials. Ten of the small projectile points were made out of quartz and two of chert. The two large points were of basalt. Flake tools were made from quartz, chert, basalt, hornfels, jasper and quartzite. The collection consisted of a combination of large and small projectile points made from three different types of raw materials. By comparison the flake tools were made from six different raw materials. Why such diversity among the raw materials? Why use different raw materials?

The projectile points exhibited four different types: Wading River, Squibnocket Triangular, Lamoka and Burwell, and were divided up into two basic styles narrow-stemmed and triangular. For a more in-depth look the narrow stemmed points were divided up into specific components: (1) tall, narrow point, (2) broad leaf-like shape with a defined point, and (3) ovate shape with a poorly defined point. In addition, these points varied in width and height (thickness was an unknown). The three Squibnocket triangular points exhibited a wide range of size: small, medium and large. Were the minor variations in size important? Triangular points were recovered along with a Burwell which is semi-triangular. Do slight differences in a shape make a difference? The narrow stemmed points as the name implies have short, thick stems. In comparison, triangular points lack a stem. Instead they have a wide, broad base the full width. Although similar in size the two types of points have different bases. How did the bases affect securing the points to the shaft? Did it have an affect on the impact of how the point functioned?

According Sgarlata (2019), “A total of 27 utilized flakes were identified” and in addition “there were 15 retouched flakes.” (p.10) This adds up to a total of 42 flake tools. In the conclusion Sgarlata states “expedient flake tools (a total of 53) ...” (p.18) This discrepancy is not addressed nor explained. The site produced fourteen projectile points and five bifaces. (p.10) Sgarlata states, “Utilized flakes were in the majority, and nearly all the non-projectile tools had minimal marginal retouch.” (p.17) The first part of statement is supported by the fact flake tools outnumbered the projectile points and bifaces at an approximately 2:1 ratio. The second part of the statement is problematic: only 15 of the 42 flake tools were reported as having been retouched. Notwithstanding these inconsistencies, it is clear the flake tools were a significant part of the tool kit at this site.

### ***“Expedient Flake Tools”***

Sgarlata pointed out, “This kind of expedient tool production, where tool makers produce hundreds of flakes at a time and choose those with the most appropriate size and shape for the task at hand, is well documented by Parry and Kelly (1980) [1987].” (Sgarlata 2019, 17) The concept of expedient tools is a core part of Parry and Kelly’s “expedient technologies and sedentism” theory/model. Their theory advocates for a diminished use of formal projectile points and an increased use of flake tools. Furthermore, the model postulates that the presence of expedient tools is a diagnostic trait for sedentism. (Parry & Kelly 1987) Sgarlata did not explicitly discuss the sedentism aspect of the model nor did he outright state the Warner Site was an example of sedentism. However, in the conclusion he implied that some degree of sedentism was

occurring, “After choosing an inland late/fall winter campsite, the inhabitants of Warner Locus 1 appear to have remained at this location until moving away in the spring. In other words, the camp location was carefully chosen in a resource-rich area to avoid additional seasonal moves.” (Sgarlata 2019, 18)

Some archaeologists considered the Parry and Kelly (1987) model to be the gold standard on the subject. However, their model was challenged within months of publication. Leland W. Patterson, criticized their work in his “Amorphous Cores and Utilized Flakes: A Commentary” in *Lithic Technology* (1987). Since 1987, the subject of mobility / sedentism has been extensively researched and discussed. It has proven to be a complex topic.

Robert Kelly, co-author of the Parry & Kelly model (1987) wrote an exhaustive paper on the subject of mobility / sedentism in 1992. The paper was based upon a review of 170 excavation reports, studies and papers. Kelly offered a sophisticated analysis of the topic discussing the state of research as of that date. The paper is refreshingly honest in its assessment. Kelly acknowledges what is working with the various models, analytical approaches, and concepts and what is problematic and flawed. Part of the paper addressed the relationship between tool technology and mobility/sedentism within a society. Speaking specifically about the 1987 study he co-authored, Kelly explained, “expedient flake tools and bipolar reduction are associated with infrequent moves ([ref#]118). However, the distribution of lithic raw materials could alter these associations significantly.” Kelly was being realistic about the fact there are limitations to the application of the sedentism/expedient tool model. The biggest surprise is when Kelly concluded the subject of mobility and tool technology with “At present, then, many interpretations of stone tool assemblages as indicators of mobility are subjective, intuitive and sometimes contradictory.” (Kelly 1992, 55-56)

The Parry and Kelly model, despite its wide spread acceptance amongst some archaeologists, has continued to be challenged and heavily criticized. For example, in 2010, Jim A. Railey, a New Mexico archaeologist, argued that the model was flawed in an article published in the respected journal *American Antiquity*. Railey argued the shift to expedient tool technology correlates with the introduction of the bow and arrow. The correlation between the shift to expedient tools and sedentism is not supported archaeologically at sites in southern New Mexico. In 2020, Bradley J. Vierra, Ph.D., and four other co-authors likewise challenged the Parry and Kelly model. They essentially argued that the model was overly simplistic. They were also not satisfied that Railey’s transition to bow and arrow was the sole cause of the shift either. Instead they proposed that the shift to expedient tools was the result of multiple different factors and social conditions. They expanded the list of factors to include subsistence and gender roles. These two articles illustrate the need to periodically examine the basis of generally accepted concepts and ideas. Such an examination can yield fresh perspectives and new insights.

### ***What is a Flake Tool? Is it an expedient tool as archaeologists label it?***

The term expedient flake tool is commonly accepted by archaeologists. Is this a correct term? Among archaeologists it appears to be an ambiguous and vague type of tool

thought to be either a scraper and/or knife. A third usage was found in the literature, woodworking. Is there evidence of unmodified flake tools in the anthropological record?

This excerpt is from New Guinea, “All tools are hand-held and should a sharp edge interfere with a comfortable grip the edge is blunted by striking it vertically several times on another stone. This is the only form of secondary retouch to artifacts that was observed (White 1968: 512-513).” (Quoted in Parry & Kelly 1987, 286)

The following was recorded in Brazil, “After striking off each flake Kwe examined the edges and experimented with it in his hand to see if it could be easily held, or if there were sharp edges that might cut him if he used it ... Nheengo piled up flakes and fragments that he considered useful, pushing aside the rejects and waste. He examined and chose his tools carefully ... The vast majority of the flakes and fragments that were set aside were not retouched before being used and their sizes and shapes were extremely varied. Rather than choose flakes on the basis of overall form, the informants tried out the stones empirically, one after another, to determine the tools best suited for any particular task. Once a stock of stone tools had accumulated, the informants were ready to start woodworking (Miller 1979: 402-403)” (Quoted in Parry & Kelly 1987, 287)

The flake tools recorded as being manufactured were informal, non-shaped and lacked retouched working edges. They were used “as is.” The Brazil example was strictly associated with woodworking. Although these flake tools were informal and used “as is,” each flake was chosen for specific attributes for the task at hand.

These accounts offer two important insights for evaluating the Warner Site and other sites in New England. The criteria for identifying flakes utilized as tools at the Warner Site was the presence of “minimal marginal retouch” on them. As these accounts demonstrated, flakes could be used without any retouching. Additional analytical criteria like use wear should be evaluated. The accounts also suggest New England archaeology needs to expand the potential uses of these flake tools to include a range of wood working activity.

William Andrefsky Jr., Professor Emeritus at Washington State University, who has published extensively on lithic technologies in the archaeological record, wrote:

#### “BACKGROUND ON FLAKE TOOL USE

In the summer of 1975 I participated in an experimental archaeology project at Virginia Commonwealth University directed by Dr. Errett Callahan. That project involved a group of student archaeologists making and using primitive technology and foraging in the eastern woodlands along the banks of the Pamunky River for six weeks. As the trapper of the group I prepared snares by stripping hickory bark for cordage and cutting, sharpening and notching snare pegs from the same green hickory saplings-all with flaked stone tools. When I brought the first trapped groundhog (*Marmota marnax*) back to our camp, Dr. Callahan proceeded to remove a series of flakes from a large bifacial core. After removing a dozen or so, he selected one flake about an inch and a half long and proceeded to skin, clean, and disarticulate the marmot. After completing the task he held up the flake he used and proclaimed that, ‘...this was the most important tool for any hunter and gatherer.’ At the time I didn’t think much of the event nor about what he had said. After all, it was clear to me that the biface he used to make to the flakes was a

more valuable tool and it certainly had more time invested in its manufacture.” (Andrefsky 2014, 4)

The small unmodified flake about 1 ½” half long (3.8 cm) was used as a tool to butcher the groundhog. The archaeology student misinterpreted at the time what was the most important tool. Andrefsky went on to experiment with flake tools associated with woodworking. The reason for doing so “I suggest wood whittling in the form of shaping, sharpening and notching sticks was a routine task for making arrow shafts, lances, snares, digging sticks, pegs, poles and many other practical items used by foragers on a daily basis.” (Andrefsky 2014, 4) “Ethnographic accounts of flake tools used for wood working suggest that unmodified flakes are more efficient than modified flakes in some circumstances.” (Ibid 6) His experiments prove this was a correct assessment. “When these test results are graphed to show the average amount of wood removed for each of the four tool types [unmodified chert, modified chert, unmodified obsidian, modified obsidian], unmodified chert flakes are almost twice as efficient at removing wood than modified chert flakes and unmodified obsidian flakes. And they are almost three times as efficient as modified obsidian flakes at whittling wood.” (Ibid 10) “... this experiment suggests that there may also be a functional reason for the selection of unmodified flakes for specific tasks. Unmodified chert flake tools are significantly more efficient than modified [sharpened] chert flakes and any form of obsidian flake tool.” (Ibid 14) Andrefsky brings up two important factors regarding flake tools: functionality and efficiency.

Although unmodified flake tools were more efficient some were re-sharpened and others were not. Gould, Koster and Sontz did their research with the western desert aborigines in Australia. They classified their tools into two categories. “A thick flake which can be trimmed to a steep working edge suitable for adzing or scraping in making wooden objects is call *pupunpa*. A flake with a thin, sharp edge suited for slicing or cutting is termed *tjmari*.” (Gould, Koster & Sontz 1971, 149) The latter tool is used for butchering. Adzes were re-sharpened when they dulled (Ibid 159). Knives were not re-sharpened (Ibid 156). The tools are distinguished by the angle of the working edge.

In a study of the living culture of the Wola of Papua New Guinea, Sillitoe and Hardy had this to say. “The Wola only viewed their flake lithic artefacts in relation to their use, ... and did not conform to widely used archaeological categories such as ‘curated’ and ‘expedient’.” (Sillitoe & Hardy 2003, 556)

Flake tools had two functions: woodworking and butchering. Frison (1968) showed in his study of a bison butcher site that butchering tools were also separated into two categories: scraper and knife. In the bison example both tools were used in the butchering process.

Frison’s (1968) study showed, “Working edges must be right for the task at hand. Scraping edges must be different from cutting edges. An edge that is too thin will cut fast but will also nick easily, and then time and material are wasted in restoring the tool to a functional condition. Scraping edges must not be too sharp or they will cut and ruin the hide or other material being worked. In other words, there are strong forces that cause certain attributes of tools to cluster around a central tendency in order to maximize their utility. Maximization of tool use to a high degree is suggested by the Piney Creek material.” (Frison 1968, 152) Frison’s work indicates the simple scraper and knife were

specialized tools. They had worked edges specific for their particular purpose which were confirmed by living cultures still using these types of tools. What Frison got incorrect was these tools are not distinguished by their edges but by the steepness of the edges (see paragraph above on western desert aborigines).

Is there a big missing component in New England's archaeological record like woodworking? Flake tools represent woodworking and butchering. Woodworking flake tools were recorded in several studies of living cultures still using stone tools. For the most part they played a greater role in the cultures than projectile points. Flake tools are functional technology not expedient technology. As demonstrated in Andrefsky's experiment raw materials had significant impact on how a tool preformed. This is re-enforced by the experiments done by Loendorf et al (2018) with arrow points. That could account for quartz being favored over other local materials. Flake tools inadvertently were human kind's first disposal tools.

Andrefsky (2014), Gould et al (1971), Sillitoe and Hardy (2003) and Frison (1968) are among a number of reliable sources demonstrating the importance of flake tools to indigenous cultures around the world. It played a more diverse role than the projectile point. Flake tools were a part of the tool kit. Although flake tools make up the greater part of the assemblage, they do not dominate as Parry and Kelly theorized. One tool did not dominate over another tool instead projectile points and flake tools complimented each other combining to form tool kits. What the rise of the functional flake tool in the Late Archaic periods suggests (amongst other factors) is an increase in woodworking of small items like atlatl shafts and throwers, tent pegs, snares, digging sticks, tool handles, shelter construction and various household items.

### **Accounting for the Diversity of Points**

The Warner Site and the Late Archaic period in general had a diversity of projectile points. The diversity shows up in their shapes, sizes (small to large), and the raw materials they were made of. What is the purpose and function of this diversity? This section explores that question.

### ***Atlatl Points & Small Points***

The Late Archaic period (6,000 to 3,700 years ago) predates the introduction of the bow and arrow (c.1000-1500 years ago) by thousands of years. The projectile technology of the period were atlatls and spears. The large projectile points are clearly associated with this technology. This raises a question as to what small projectile points (stemmed and triangular) were used for?

David Thomas (Department of Anthropology, American Museum of Natural History) came up with innovative study to address these questions. He searched museum collections to find examples of projectile points still attached to their hafts (i.e. wooden shaft). His study located 132 arrows and 10 atlatls. (Thomas 1978, 467 & 468) "Special care was taken when selecting this sample to be certain that the foreshafts were indisputably used with the atlatl." (Ibid, 468) Likewise was done with the arrows. The atlatl points in the study ranged in length from 3.4cm up 6.5cm (Ibid, 466). The arrow

points ranged in length from 1.3cm up to 5.5cm (Ibid 464). This shows a wide range of lengths were used with both atlatls and arrows.

Included in the study was experimental analysis. “A complementary mode of analysis has been direct experimentation. Several investigators have actually constructed bows, arrows, atlatls, and spears, then test-fired the weapons to determine the parameters. In one instance, Jim Browne (himself an experienced archer) demonstrated experimentally that arrows work quite effectively with stone points as long as 5cm (Browne 1938, 1940: also see Evans 1957). Fenenga (1953: 319) performed a similar experiment to demonstrate the opposite effect that small points can be used effectively on atlatls.” (Ibid, 461) The experimental analysis matched the physical evidence. The experimental field data shows a wide range of projectile points had the potential to be used on arrows, atlatls, and spears.

Small points at the Warner site ranged in length from 1.5cm up 3cm (approximate as taken from photo). Some of Thomas’s atlatl point examples were within the small projectile point range and thus the larger of the small projectile points at the Warner site had the potential of being used as atlatl points.

Based upon his study, Thomas developed a formula for classifying projectile points recovered without haft associations (Please see his article *Arrowheads and Atlatl Darts: How the Stones Got the Shaft* for specifics). He tested his formula and obtained the following results: “Out of 142 artifacts, 3 atlatl points and 17 arrowheads were incorrectly assigned. This means that classification equations successfully reclassified the original sample with an accuracy of about 86%. Considering the small sample of atlatl darts available, we think that this accuracy is satisfactory and indicates that the discrimination function approach will prove of use in practical archaeological applications.” (Ibid 471)

Why and how were smaller projectile points sometimes used on atlatls? According to archaeologist Jim Railey “... smaller points are typically easier to manufacture than larger ones, and this (and perhaps raw material availability in some cases) may have encouraged atlatl-users to produce small points. Although atlatl-propelled darts apparently need to be heavier than arrows at the tip for optimal performance, tipping darts with small, lightweight points can be compensated for by using a heavier foreshaft (Whittaker 2007, 10).” (Railey 2010, 264) Whittaker shows how alterations to atlatls could compensate for the smaller points.

### ***Diversity of Point Designs***

Archaeologists have developed detail classifications for projectile point designs. These various designs are assigned to specific periods, phases, and traditions. This is extremely useful for dating purposes. Can those designs convey more information? What does the design say about the type of species being hunted? About warfare? About the type of weapon is was used on? Whether it was used as a projectile point or some other type of tool?

In archaeology, the focus generally has been on stone projectile points. Other types of projectile points made from bone, antler and even wood were used but were rarely preserved in New England’s archaeological record. Loendorf et al (2017) state, “In a cross-cultural study of over 100 preindustrial societies, Ellis (1997) observed that these



different types of projectile tips were employed for separate purposes. While organic [bone, antler, or wood] points were commonly employed in small game (<40 kg) hunting, stone tips were closely associated with either large game animals (>40 kg) or warfare.” (Loendorf et al 2017, 84)

Today, hunting is generally associated with big game and mammals. However, for Native Americans New England’s marine environment was an equally important food resource and hunting area. In *A Handbook of Indian Artifacts from Southern New England* (1991) is the Fox Creek Stemmed, a large projectile point type that is “more common in the coastal zone of Southern New England.” (Hoffman 1991, 22). That suggests its use may have involved hunting associated with the marine environment. The marine environment includes seals (on beaches and in the water) and large fish. Spears versus atlatls were likely the weapons as this is a Middle Woodland period point.

An article by Vierra, Chapin, Stevenson & Shackley (2020) argues the diversity of tool design is associated with diversity of animal species being hunted.

“In contrast to the Middle Archaic, the Late Archaic is characterized by a diversity of projectile point types that are made on flake blanks. These consist of corner-notched, stemmed, side-notched, leaf-shaped and contrasting stem varieties. Each type was presumably designed to increase the hunting efficiency for specific target species associated with an increasing diet breadth. Tool designs varied from points that were designed to remain connected to the foreshaft (e.g. corner-notched and stemmed), to points that were designed to break at the neck with the blade continuing to work its way through the animal (e.g. side-notched). Lastly, smaller leaf-shaped and contracting stem points were designed to detach from the foreshaft and lodge into the animal. In the latter case, blade serration presumably acted to increase tissue damage. These points were often made of obsidian, with sharp, thin flakes with a tool design that emphasized penetration efficiency (Hughes 1998; Vierra 2013a; Vierra et al. 2012; Vierra et al. 2018). Late Archaic groups were becoming more logistically organized while focusing on a variety of target species. Therefore, the subsequent use of the bow-and-arrow would have reflected the culmination of a long-term process designed to increase point penetration efficiency and hunting success rates (Vierra 2013a).” (Vierra et al 2020, 5)

This article hypothesized that the diversity of projectile points was associated with “specific target species.” This makes logical sense.

The use of different point designs for different target species also applies to warfare. “Extensive ethnographic evidence and ethnohistorical accounts indicate that points intended for use in warfare were frequently designed differently from those made for hunting large game animals. Because of the considerable efforts required to track a wounded animal as well as the increased chance it will not be recovered for consumption, hunting points were made to kill as rapidly and consistently as possible. In contrast, warfare points were designed to maximize the probability that injury or death resulted, regardless of how long this might require (Loendorf et al. 2015a).” (Loendorf et al 2017,

85-86) The differences between hunting large game and warfare therefore produced another form of diversity among types of projectile points.

Are all “points” designed for use as projectiles or were some used as other types of tools? Timothy Ives (2014) analyzed stone tools from the Monhantic Fort in Mashantucket, Connecticut with a Middle Archaic period component. He found two small Neville points each containing a dull side with wear patterns of knives. In turn, he found a site that had a comparable comparison. “... Neville points may have been used as knives. Similarly large Neville-like points have been discovered at the Nichols Point site, a submerged Middle Archaic burial in the upper Chesapeake Bay. Its mortuary assemblage includes an oversized Neville-like knife socket-hafted in an antler handle. (Lowery and Martian 2009: 163) The point in addition to two similar specimens from the site exhibit asymmetrical blades suggestive of ‘resharpening, consistent with knife function (ibid 162). And while the author [Ives] agrees with Cross (1999) that oversized Neville-like points were probably better suited for use as knives than typical (smaller) specimens, the diminutive Neville ‘knife’ from the Monhantic Fort cautions us that size is not an adequate criterion for determining whether or not a point was enlisted for cutting.” (Ives 2014, 10-11) Ives shows small projectile points had yet another type of use as a hafted knife. This shows diversity of use through converting a projectile point into a knife.

Jeff Boudreau (2008) in his “*Rethinking Small Stemmed Points*” study of small stemmed points realized not all were used as projectile points. “At first glance, these artifacts appear to be functional small stemmed projectile points. However, closer inspection reveals that as much as 4mm of the tip has been worn away through a graving or drilling operation.” (Boudreau 2008, 12). This adds another very different function to the small stemmed points that of drills and gravers.

“Dr. John Cross has argued that the Neville and Stark types are contemporary but functionally distinct, with the Neville points used for tipping projectiles (such as javelins or darts thrown with atlatls) and Starks having been used as thrusting spear points.” (Lavin 2013, 73) The accompanying illustration in Lavin (p.73) shows the Middle Archaic period large Neville points to be wider than the large narrower Stark points accounting for his assessment. What is not explained is if Cross included the smaller points of each type in his assessment? The small points of each type are quite similar in design and size to each other, and do not exhibit traits that are easily distinguishable from each other. Some diversity can be accounted for but the majority can not yet be accounted for.

### ***Diverse Points Made at the Same Site***

At the Rubin Farm site Boudreau (2005) wrote, “As a flint knapper, the writer was impressed by the large size of the stemmed point preforms. Fully two to three times the size of the finished point, these bifaces required significant reduction of a difficult material. The inventory of quartz tool types included steep edge and stemmed scrapers as well as eighteen triangles, of which twelve are Squibnocket. There was one very good Wading River point, virtually identical to that shown by Ritchie (1969:177), as well as several broken points with the same blade type (not illustrated).” (Boudreau 2005, 38) Here it can be seen different types/designs of projectile points were made on same site.

This confirms diverse points could be and were made by a single culture/group. The diversity of points is not necessarily an indicator that the points were traded or imported.

### ***Hafting***

“Problems arise in attaching a stone point to a projectile shaft if the portion in the haft is wider than the shaft (Christenson 1997:134-135). First, firmly fastening the point is difficult because the binding materials are cut by its sharp edges unless they are ground (Fauvelle et al. 2012; Geneste and Maury 1997:183). Second, the bindings necessarily extend over a larger perpendicular area to the cutting edges of the point, which increases the cross-sectional area and impedes penetration (Christenson 1997; Knecht 1997: 201-202). Notching is one solution for reducing the width of the stem and facilitating secure hafting of the point (Christenson 1997:135). These observations suggest that triangular points designed for hunting have notches in that portion of the blade that is in the haft, while points intended for warfare may not have notches.” (Loendorf et al 2017, 86)

Detachment was also tested for “... obsidian and chert projectile points detached more readily from arrow shafts than did siltstone and basalt. This appears to be because the pine pitch adhesive used to attach the points did not bond well with the obsidian or chert due of [to] the fine surface textures of these materials.” (Loendorf et al 2018, 55)

Boudreau (2005) introduces an interesting point regarding hafting. “Invariably, there are groups of points that appear to have been mated to the same haft. It is possible that prehistoric knappers could produce virtually identical points without a reference. But the fact is, every functional point had to be fitted to a haft, with the haft acting as a template. This is especially true of stemmed points. If the foreshaft or haft were more labor intensive to produce than its stone tip, then the haft would not be modified to accept a point; the point would be modified to fit the haft. And it is probable that, in any given assemblage, some of the points were made by the same person and fitted to the same haft.” (Boudreau 2005: 42-43)

Shoulders and necks of points with their wide range of configurations produce some interesting challenges to attaching points. Some were configured to keep the point intact upon impact. Others were configured to allow the point to come loose upon impact. (see below Raw Materials). Bases had important functions.

### ***Raw Materials***

Research on raw material choices show not all materials are equal. “Our investigations suggest that while projectile tips made from highly brittle materials such as obsidian excel in some ways, they perform poorly in others.” (Loendorf et al 2018, 50) The brittleness of obsidian makes it ideal for warfare but not so good for hunting yet it was used for that purpose also. “While obsidian may be ideal in some ways for warfare point designs, any raw material choice is conditioned by multiple factors, and availability has been shown to be one of the paramount issues (Andrefsy, 1994, 2005; Smith, 2015). For example, in regions where obsidian was abundant, it was commonly employed for many tasks where its performance may not have been ideal.” (Ibid 56)

This statement is reflected in *The Original Vermonters* (1994): “According to Peter Mills, an accomplished flint knapper and experimental archaeologist, the

morphological attributes of Jack's Reef points place them well within the range of known arrow points. Mills also suggests that Jack's Reef points were not made to last; they are quite thin, with broad bases and very thin, exposed barbs; altogether they are fairly fragile. Hunting experiments with similar points indicate that on impact, the result is much like shrapnel exploding within prey: Broken fragments migrate from the entry point and increase the severity of the animal's wounds." (Haviland & Power 1994, 122-3) The experiments show brittle-like points could be used effectively in hunting game. They also show the need to combine laboratory experiments with field experiments. In this case, the field experiment confirms what has been seen on archaeology sites where obsidian is abundant and used for what was thought to be less than ideal activities such as hunting. When instead it may have been the "ideal" hunting point. This last concept needs to be field tested to figure out if obsidian is or is not ideal for hunting.

"Presumed quality also conditions assumptions regarding the value of materials, including the identification of high status goods (McGuire, 1992; Tripkovic, 2003; White et al., 2013). Research presented here suggests that it is impossible to rank order flake stone point raw material from low to high quality with respect to projectile performance. Instead, understanding 'quality' in the sense necessitates the definition of specific functional traits, and optimization of one design parameter usually results in compromising others (Bousman, 1993; Braun et al., 2009; Knecht 1997)." (Loendorf et al 2018, 51) The above statement shows why one raw material might be rejected or chosen over another at a particular local occupation site. At the Warner site it was presumed the higher grade material was "sacrificed" for the easier to obtain quartz. That is not likely the case.

### ***Discarded Tools***

Ives (2014) introduced the hypothesis projectile points found on site came from purposely discarding them. This has the potential to affect diversity of designs. "Twenty (or 33%) of the Middle Archaic stemmed points at the Monhantic Fort are generally complete (Figure 2). Foragers may have decommissioned these tools from their personal gear when their utility declined according to shifting conditions of their lithic economies such as the relative abundance of material or manufacturing time." (Ives 2014, 4) How do you prove it has been decommissioned?

Frison (1968) proved discarded stone tools were the result of 'end-of-life' of a tool. "As a tool becomes dull, a point is reached where it is expedient to stop work and sharpen the tool. Stone tools, like any other, reach a point where resharpening no longer renders them functional, and they must be discarded and a new tool selected." (Frison 1968, 152) Frison was dealing with scrapers and knives at a butchering site which have the potential to carryover to projectile points.

### ***Discussion***

The research shows that the diversity of projectile designs is a complicated subject that requires complex testing in multiple different disciplines. The research so far has produced some answers. Points recovered connected to the weapons showed arrows had much larger points than were thought possible and points used on atlatls could be

smaller than generally thought. It also confirmed the size of points often associated with them were correct. It showed a formulae can be successfully used to identify unattached points: arrow or atlatl. Small points were not always used as projectiles some were used as knives, drills or graters. Brittle raw material in laboratory testing deemed poor for hunting was proven in field testing to be useable. That indicates controlled laboratory testing should be used in conjunction with field hunting.

The small narrow stemmed point appears to have been a multi-purpose object. That may account for its above average quantities that are recovered through excavations and surface finds.

## **CEREMONIAL ACTIVITY AT A HABITATION SITE?**

### ***“A Unique Activity Area” (Area “G”)***

At the Warner site, in area “G” east and north of the pit house two units were excavated out of a potential of six units. The two units contained five and six artifacts apiece. What stands out is there were no flakes, absolutely none in either unit. This is in stark contrast to the other eighteen units all of which contained flakes in varying quantities. The fact these two units contained no flakes, sets area “G” apart. In addition, area “G” is at the edge of the terrace.

Another unknown factor is if these are the only artifacts within area “G” or are there more? Since only a small portion was excavated it is not possible to know. That factor reduces the ability to make specific comparisons though some general comparisons can still be made.

Another unknown factor is the artifact distribution pattern within each unit. It is not shown. Were the artifacts in close proximity to each other? Were the artifacts widely spread out? The distribution factor may have a bearing on the interpretation.

“Finally, east and north of the pit-house and exactly at the edge of the first terrace overlooking the West River, in EUs S25E5.2 and S26E6, an abrading stone, and concentration of cores and tools, including a Squibnocket Triangle and a Wading River point were found (Area G, Figures 5 and 6). This is interpreted as a unique activity area separated from the household by several meters.” (Sgarlata 2019, 16) Figures 5 and 6 show area G had two different excavation units with artifacts. The excavation unit on the west side had two points, one scraper, and three cores. That places the Squibnocket Triangle and Wading River narrow stemmed point together in the same unit. The excavation unit on the east side contained one biface, one abrading stone and three cores. Each unit therefore contained exactly three cores. Is that by coincidence or intentional?

The two groups of artifacts were interpreted as “an outside activity area, or alternately a secondary trash dump.” (Ibid 15) The author has expanded the interpretations to investigate four different types of potential activities: Manufacturing, Cache, Secondary Trash Dump and Ritual or Ceremonial Activity.

(1) Does the activity suggest manufacturing? Were the cores, the reduced raw material used for projectile point manufacture, brought together with finished points so they could be duplicated? That idea is debunked by the east side unit containing an abrading stone which is not manufactured. In addition, the lack of waste flakes shows the units were not

used for manufacturing. Manufacturing areas were identified at the site and pointed out in the article. Area “G” as Sgarlata pointed out was partially excavated leaving three-fourths unexcavated and therefore an unknown. What seems strange is the complete lack of flakes in the two excavated squares. The other eighteen excavated squares on site all had flakes so it does not compute that two squares in this area would be totally exempt from flakes if manufacturing took place here.

(2) A peer reviewer suggested the concept of “Tool use then discard. Tools may have been manufactured or resharpened in the main area of the site, and then used in another location, and discarded. Binford 1980 (Willow Smoke and Dog Tails), and Yellen 1974 (The !Kung Settlement Pattern) noted similar patterns in the archaeological site formations of modern hunter/gathers.” (Reviewer #2) This is an interesting concept but it does not account for the diversity of tools in each group. What do points have to do with a scraper? What are cores doing in with points as this is not a manufacturing area? What does an abrading stone have to do with a biface and cores? For this concept to fit given these are small groups of tools each tool should relate to the same activity. They do not. In fact hunting (points), manufacturing (cores), hide preparation (scraper) and tool refinement (abrading stone) are represented.

(3) Do the deposits represent a secondary trash dump? The following questions were posited by Sgarlata to evaluate the concentration of artifacts on the exterior wall of the pit-house as to whether or not it might be a trash dump. “If the artifacts were swept here, we would expect the size distribution to favor larger sized artifacts. This was also, by far the densest concentration of artifacts. If the trash dump represented artifacts cleaned from the interior of the pit-house, we expect numerous domestic tools to occur here.” The answers were all in the affirmative thus confirming a trash dump outside the pit-house. This criteria was not applied to the artifacts in the two units with 5 and 6 artifacts apiece. They were not dense concentrations rather they were some of the lightest concentrations found on site. The two groups of artifacts do not fit the criteria for a trash dump.

(4) Were the deposits a cache? This is doubtful based on the readily available local raw materials easily procured during the time of habitation. There was no reason to cache the raw material. One peer reviewer noted caches “may contain a religious/ceremonial component”. The Caddy Park site in Quincy, Massachusetts fits this concept (Gage 2003, 23-27). (see below under Late Archaic sites)

(5) Do the deposits represent “an outside activity area”? What does the concept refer to? Is it possible the artifacts were ritual offerings to spirits? Or represented some other type of ritual/sacred activity? The artifacts were in an area on the outer edge of the site overlooking the river. That puts the artifacts out of the normal daily activity area suggesting the area had a unique purpose. The two deposits of artifacts mirror each other forming a basic pattern. Each had a similar number of artifacts and similar mix of tools to cores. The stone tools between both deposits represent the broad range of activity at the site. In addition, no two tools are alike: the projectile points are represented by a narrow stemmed point and a triangular point; scraper, biface, and abrading stone.

It is not possible to analyze any further not knowing if these are the only artifacts in area “G” or if more artifacts exist. That said it is interesting to note the two units had a similar number of artifacts and matching quantities of cores per unit. Though it can not be proven at this point in time, there appears to be intentionality with the consistency of artifacts recovered from the units.

The two groups of artifacts have the potential to represent a couple of scenarios. One they could represent repeated occupancy of the pit-house indicating a potential annual event or ceremony. Many Native American ceremonies are held once a year like the Iroquois Midwinter Ceremony. Other ceremonies like the Sun Dance are not annual events and therefore take place irregularly. So another option could be an irregularly held ceremony held twice during a one-time occupancy. The timing of the event/ceremony is not important. What is important is whatever took place appears to have occurred at least two times.

If the deposits represent spiritual offerings then the nature of the artifacts with their similarities and differences within each unit may represent knowledge was carried over from one event to the next event. Whereby the basic tool kit was repeated but with a different set of tools for each event/ceremony. Do the small groups of tools represent “small tool kits” offerings?

### ***Late Archaic Sites with Buried Artifacts***

The first definitive tool arrangements that show up in southeastern Massachusetts are found at the Wapanucket site in Middleboro, Massachusetts. This site has a date range of 2750 BC to 1600 BC. At Wapanucket twenty-two burials were excavated, eleven were inside an ossuary. Within the ossuary two related tools kept appearing, a gouge accompanied by a sharpening stone. According to archeologist Maurice Robbins, “Gouges with their sharpening stones were conspicuous among the grave goods from this feature [ossuary].” (Robbins 1968, 63) The ossuary is dated to 2340 BC. Six of the eleven ossuary burials had the combination gouge and sharpening stone. Seven of the ossuary burials had gouges and more were found in the general pit. Of the eleven other burials 3 more had gouges and two contained a *small tool kit*. The *small tools kits* from Wapanucket are made up of gouge(s) and sharpening stone(s) and in one case an ulu and sharpening stone. No adzes were recovered. No tightly packed *groups* and no *overall tool kits* were found (Robbins 1968).<sup>1</sup>

The *small tool kits* found in burials at the Wapanucket site are similar to the sets of tools found in the two excavation units at the Warner site. The author is aware of the pre-maturity of area G not having been fully excavated. That said it does not deter from the fact nor does it appear to be coincidental each unit had a small tool kit. What it suggests is consistency within the Late Archaic culture and ceremonialism separate from burials.

“Of additional significance are nine large blades, eight of Cocksackie flint and one white quartz. They were taken from two deep deposits in which red ochre formed a part of the features. These recoveries are from Wapanucket 8 site, Assawompsett Pond, Middleborough, Massachusetts. The association of these blade types with Winged Atlatl

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<sup>1</sup> This paragraph was written by the author and originally appeared in (Gage 2003, 23). Quotation marks were omitted readability.

weights also suggests a Late Archaic age for these implements.” (Hoffman, 1991, 25) Burial has long been associated with ceremonialism. However, the ceremonial blades do not seem to be directly related to a burial as they are not listed as part of a burial(s).

At another Massachusetts site on Cape Cod, “Archaeologist Maurice Robbins (1967) reported that Titicut was a culturally rich site. The excavations uncovered 241 fire hearths and pits, 416 post molds, the rectangular outline of a structure, deposits of “red paint” or ochre, burials containing the remains of 26 individuals, numerous stone tools, trade goods, and Historic-period artifacts.” (Lenik 2002, 134) This places the Titicut stone tool offering within a village site. The parallels between the Late Archaic Titicut site and Late Archaic Warner Locus I site regarding a unique activity indicate ritual/ceremonial activity took place at habitation sites. The special ceremonial hearth is within a site with burials. Whether or not it is directly related to the burials is an unknown. What it shows is stone objects were used for spiritual offerings.

The Titicut site also had a petroglyph underneath a hearth. Lenik in his book *Picture Rocks* stated the petroglyph stone was used as a roof stone for a three sided structure underneath a hearth. The petroglyph was covered with graphite. Inside the structure were three objects, a “full grooved ax, a clumsy plummet and a white quartz scraper, all covered with red ochre.” The small open fronted structure under the hearth fits the description of a niche. (Lenik 2002, 134-135)

Lenik dated the Titicut petroglyph to the Late Archaic period placing it in the same time period the Warner Locus I site was occupied. The two sites are both in southern New England. The stone tools covered with red ochre inside the niche under the hearth in Titicut are confirmed offerings. Each stone tool had a different purpose the same as seen in the pit-house site’s “unique activity area”. Furthermore, it is interesting to see a connection with the offering and fire that was documented in the historic period. (see *Enthographic Examples* below)

At Caddy Park, the Moshup site in Quincy, Massachusetts there is a unique deposit. In 1999, archaeologists Thomas Mahlstedt and Margo M. Davis excavated a Native American feature at Caddy Park in Quincy, MA. A detailed report on the site was featured in the *Bulletin of the Massachusetts Archaeological Society* (Vol. 63, Nos. 1-2 Spring-Fall 2002). The 1m x 2m feature contains four discernible tight groupings of artifacts (caches A,B,C,D), four plummets arranged in a pattern suggestive of a net, a whale effigy, and a variety of other artifacts scattered throughout the feature. The artifacts were placed on a layer of red ocher, and a layer of red ocher was sprinkled on the top of the artifacts. Several dense areas of red ocher suggest that bags of ocher were also interred. Caddy Park was interpreted as a maritime procurement culture. The feature itself may have been a burial, cenotaph, cache, or ceremonial offering.<sup>2</sup>

The one thing lacking was material to radio carbon date the deposit. The original excavators Thomas Mahlstedt and Margo M. Davis came up with a four thousand year range for it “6,000 to 1,700 B.P. (i.e. Late Archaic to Early Woodland)”. (Mahlstedt and Davis 2002, 22) The author made comparisons with other sites with deposits and proposed a date range of 2,950 to 2,710. In turn, Mahlstedt and Davis adjusted their date range somewhat in a later display of the artifacts. The Caddy Park site is another example of ritual burial of objects. Its dating post dates the Late Archaic and predates the historic

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<sup>2</sup> This paragraph was written by the author and originally appeared in (Gage 2003, 23). Quotation marks were omitted readability.



period showing some continuity over time. Burying stone implements or tobacco appears to have had a long tradition within North American Native American cultures.

### *Entnographic Examples Explaining the Purpose of the Offerings*

The stone tools in the “unique activity area” represent a wide range of activity. Seasonal habitation sites whether winter or summer relied on hunting, fishing, plant gatherings, etc. Were offerings made to the spirits of animals for a successful hunt, for the gathering of plants, etc.? If yes, how do the offerings manifest themselves? The following examples are from the historic period when anthropologists recorded Native Americans practicing their beliefs. What is of interest to this article is the examples show ritual and offering activity associated with every day life activities like the rice harvest. In this context they relate to the Warner site an occupation site that contains a potential ritual/ceremonial activity area.

Mita’win Ceremony: “The gathering of roots and herbs for medicinal use is always attended by placing tobacco in the holes from which they were dug, with a song or a prayer in honor of Earth Grandmother, whose hairs they are.” (Skinner 1921, 66)

Rice Harvest: “He [chief] gives a feast with prayers and a speech, saying, ‘We are going to commence to pick our rice tomorrow;’ then turning to the people, ‘We make this offering to Grandfather, the Master of Rice, who caused it to grow for our use. We give this tobacco (with these words he stops and digs a small hole and puts tobacco in it), as an offering to the Underground Powers and ask them to permit us to make the harvest. We beg for four days of good weather, and then we will leave the rest of the rice to the Thunderers for their use.’ ” (Skinner 1921, 144-145)

In these examples a hole was dug in the earth and tobacco, a perishable offering, was placed as an offering to the spirits. This shows offerings to spirits were sometimes buried in the ground.

The Mashpee made offerings of both perishable and non-perishable items. “At these [spirit-lodges] the Indians [Masphee] used to stop and deposit some piece of property or food, or else pour out a libation of whisky [liquid].” (Simmons 1986, 254) Was this a wide spread practice?

In the Canadian Shield of the Great Lakes at Picture Rock Point, Western Peninsular and Portage Bay: “But here, as on most other Lake of the Woods sites, we found offerings on a water-lapped ledge; neatly folded clothing and a towel, topped by a little pile of tobacco.” (Dewdney & Kidd 1967, 44) “... someone had placed some clothing, a bundle of sticks, and tobacco on the rocks at the base. ... Bill made enquiries of the local Ojibwa and was told that these bundles were placed on the rocks with clothing and tobacco when someone was sick, different colours being placed on the sticks for different illnesses.” (ibid 51) In one example, the offerings of everyday items were placed on a flat ledge beside the water. It is similar to the outer edge of the terrace overlooking the river at the Warner Locus I site. In the other example prayer sticks were used that were associated with offerings made to spirits for healing purposes.

During the Snake Clan Feast among the Winnebago of Wisconsin: “First he [human host of ceremony] pours tobacco in the fire, for the fire is the mediator between the people and the spirit. The fire tells the spirit the wishes of the people ...” (Radin

1990, 277) Tobacco used in conjunction with fire is an example of how Native Americans communicated with the spirits.

Among the Menomini in Wisconsin: “The semi-annual [war bundle] ceremonies are still held in the form of feasts, but in these degenerate days there is no attendant scalp dance. Game is preferred for the feasting, but when it cannot be obtained, a dog serves the purpose. This modern [1913] ceremony and the rites of feeding and giving tobacco to the bundles is to please the thunders so that they will continue to sweep the earth with the winds and scour it with rains, that it may be clean and habitable for man kind.” (Skinner 1913,119) This example shows the purpose of an offering, asking the thunders to bring wind and rain.

### ***Discussion***

Making offerings to spirits is a way of life with Native Americans. Although tobacco became the preferred offering item in historic times and on into modern times, items used in daily life were also common. Everyday items (i.e. stone tools) were prolifically used as grave goods in Archaic times and later periods (Ritchie 1994, 176-177; Robbins 1968; Simmons 1970, 16-21).

### ***Natural Land Formations Imbued with Spirits***

Sgarlata in a reply to first draft of this article brought up *land form & spirituality*. “The Warner site is located in the valley of the West River which flows parallel to and near the base of West Rock Ridge. This beautiful traprock sentinel, that is such an impressive part of the local landscape, looms large above the site to the east. Understanding how the natural world could be joined to social and religious aspects of Native peoples lives, it is tempting to think that this prominent and striking landscape feature could have been meaningfully incorporated into their lives. The ridge’s columnar joints often glow orange-red and can be seen for quite a distance when struck by the midday sun.” There are examples of natural land formations associated with spirits in the historic period and some in the archaeological records. Here are three examples.

This example comes from Georgian Bay. “Near French river are two big rocks, round below, square on top, and with a narrow crack between them. Formerly they were one. But once a hunter named *Wabskitjanamshin*, who was traveling from lake Nispissing to Georgian bay with many furs in his canoe, saw the rock sway from side to side and heard a voice calling ‘*Wabskitjanamshin* is listening to us.’

The hunter was annoyed at the remark and shot his arrow into the middle of the rock, where it caused the crack that remains to this day. He then continued down the river, but the *manido* that dwelt in the rock made him drift over a fall and lose all his furs. The Georgian Bay Ojibwa now call the two rocks *Djiskan*, ‘Conjurer’s lodge,’ and sing the words given above as a kind of refrain” (Jonas King). (Jeness 1935, 45)

In the Black Hills of North Dakota Ludlow Cave is associated with spirits. “... a northern Lakota-Arikara man named Goose. Goose told Custer of a wondrous cave full of animal bones and with walls covered with magical pictures that changed before one’s eyes. Custer detoured the expedition westward so he could see for himself this natural wonder, the Lakota name of which translated simply as ‘the cave.’ After a long and

difficult trek, the expedition arrived at the place now called Ludlow Cave. William Ludlow, Custer's chief engineer, and the enlisted men were unanimous in their disappointment at the cave. It was little more than a long crevice in the sandstone rimrock, covered with rudely scratched designs and littered with arrows and other offerings left there by the Indians. The men helped themselves to these offerings – an act for which Lakota and Cheyenne tradition promised severe consequences. A few still remembered the place, however, when the anthropologist George Will began his fieldwork among the Mandans of central North Dakota early in the twentieth century. Mandan elders told him of a sacred cave north of the Black Hills. From this opening to the underworld, bison emerged periodically to replenish the herds, so the people might live. The people prayed and left offerings at the Ludlow Cave and other 'buffalo home' buttes to entreat the bison to continue to support human life." (Sundstrom 2004, 79, 81) Custer's account says it all regarding the lowly nature of the cave, the "enlisted men were unanimous in their disappointment."

In Tennessee is another cave called Mud Glyph Cave. "On a cold day in early 1980, two members of the U.S. Forest Service crawled into a narrow cave in an East Tennessee hillside. After scrambling through mud, knee-deep water, and keyhole passages in the rock, they found themselves face to face with ancient drawings of humans, animals, and symbols – a hitherto unsuspected body of prehistoric art." The cave was later dated to the Middle Woodland period circa 465 A.D. (Faulkner 1986, Flap of book's paper cover)

Natural land formations were places where Native Americans had personal experiences attributed to spirits. The hunter and split rock in Georgian Bay is the perfect example. In the Ludlow cave example the Native Americans associated it with the "underworld" from whence the "bison emerged periodically to replenish the herds". Mud Glyph Cave is an archeological site where Native Americans trudged "through mud and knee-deep water, and keyhole passages in the rock" to create mud glyphs on the walls. None are aesthetic places.

It is tempting to look at the natural land formation with its vibrant colors on West River as a potential spiritual place. But as the examples show natural land formations were associated through spiritual encounters not by how attractive they looked. Given that the rock formation at the Warner site was a procurement place of "local lithic raw materials that are quite aesthetic" it would seem to make it a special place. However, as Loendorf et al pointed out raw material no matter how exotic it may seem to us today in its time may not have held the same importance. We as 21<sup>st</sup> century researchers need to be cautious in our perceived or misperceived logical thinking.

In the mountains of literature from the historic period it is evident most ceremonies were not associated with natural land formations. Instead they were associated with such things as agriculture, rain, serpents, sun and Underworld whose spirits controlled nature (see *Why Do Historic Farms Have Ceremonial Sites?* Gage 2018, 129-163) There was a need to have the natural world function to the benefit of the people that is bring enough rain but not too much rain, etc. Agriculture is one of many different aspects of life that were dealt with through ceremony, there were many more. What surprised the author with the research on farms and spirits was what we do not consider as being related such as serpents and rain within the Native American culture. In turn, we do not have the ability to ask questions we do not know exist. The Native

American culture in many ways is foreign. We cannot begin to attempt to understand the ceremonial aspects until we read numerous accounts collected while the ceremonies were still being conducted.

## CONCLUSION

The Warner site was analyzed by Sgarlata through a social context. The social context was based on the “expedient flake tool” simplified tool kit and sedentism theory proposed by Parry and Kelly (1987). Parry and Kelly’s theory although widely accepted has come under scrutiny in recent years. It has been heavily criticized for being too generalized, overly simplistic, and not taking into consideration a wide range of other factors to explain the rise of expedient tool technology. Even the model’s co-author, Robert Kelly in a later paper, cautioned against using tool technologies alone as a diagnostic indicator of sedentism.

A major part of the expedient tool theory involved flake tools. Research conducted with living cultures using flake tools proved they were a major part of the culture’s tool assemblages. It also proved flake tools did not supplant projectile points, were not considered expedient, and were not produced to create leisure time as expressed in the theory. The research proved flake tools were a functional technology, were used by hunter gather cultures, were an important tool in their tool kit, and that they dominated not because they supplanted the projectile points but because they were the most universal type of tool in their assemblages, and that they were utilized equally in processing animals and woodworking of small items like atlatl shafts and throwers, tent pegs, snares, digging sticks, tool handles, shelter construction and various household items. What this data shows is there is a large gap in the New England archaeological knowledgebase regarding flake tools and their use for small woodworking in the daily lives of Native Americans.

The Warner Locus 1 Site raised an interesting question as to why there were a diversity of projectile points on a single component occupation site. This diversity included the size of the points, their design and the raw material they were made from. Outside of New England, archaeologists have actively explored this question through site analysis, review of museum collections, experimental archaeology and hands-on use of these lithic technologies. The answers to this question are complex but insightful. Thomas (1978) demonstrated atlatl points ranged in size from 3.4cm to 6.5cm and arrow points ranged from 1.3cm to 5.5cm. This variability in size needs to be factored in to site analysis. Loendorf et al (2017) and Vierra et al (2020) made a convincing argument that the design of the projectile point and the raw material they were made from were carefully chosen to serve a specific purpose. Projectile point designs and raw materials differed between those used for hunting and those used for warfare. Within the hunting category, projectile points were designed for specific “target species.” A point suitable for hunting big game was not effective for hunting small game and vice versa.

Loendorf et al (2017) reminded researchers that in addition to stone projectile points there were “organic” projectile points made from bone, antler and wood. These organic points rarely survive in the New England archaeology record but they still constituted an important part of the indigenous tool kit. They are a part of the diversity of projectile points.

The author's objective was to explore the "diversity of projectile points" question rather than to provide a definitive final answer to the question. By expanding the research to the archaeological literature outside of New England, a wide range of new perspectives was found on this question. These new perspectives, ideas and analytical approaches may prove useful in expanding our knowledge of New England lithic technologies.

The second part of this paper evaluated the potential for ceremonialism at the Warner Locus 1 Site. The ceremonial aspect was explored through the common knowledge Native Americans integrated ritual spiritual activity into their daily lives. The Titicut and Wapanucket sites provided examples from the Late Archaic period though in each case they appear to have a connection with burials. The historic examples clearly show a connection with ritual activity and daily life that is potential at the Warner site. It shows a need to expand archaeological analysis to include potential ritual/ceremonial activity at occupation sites.

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